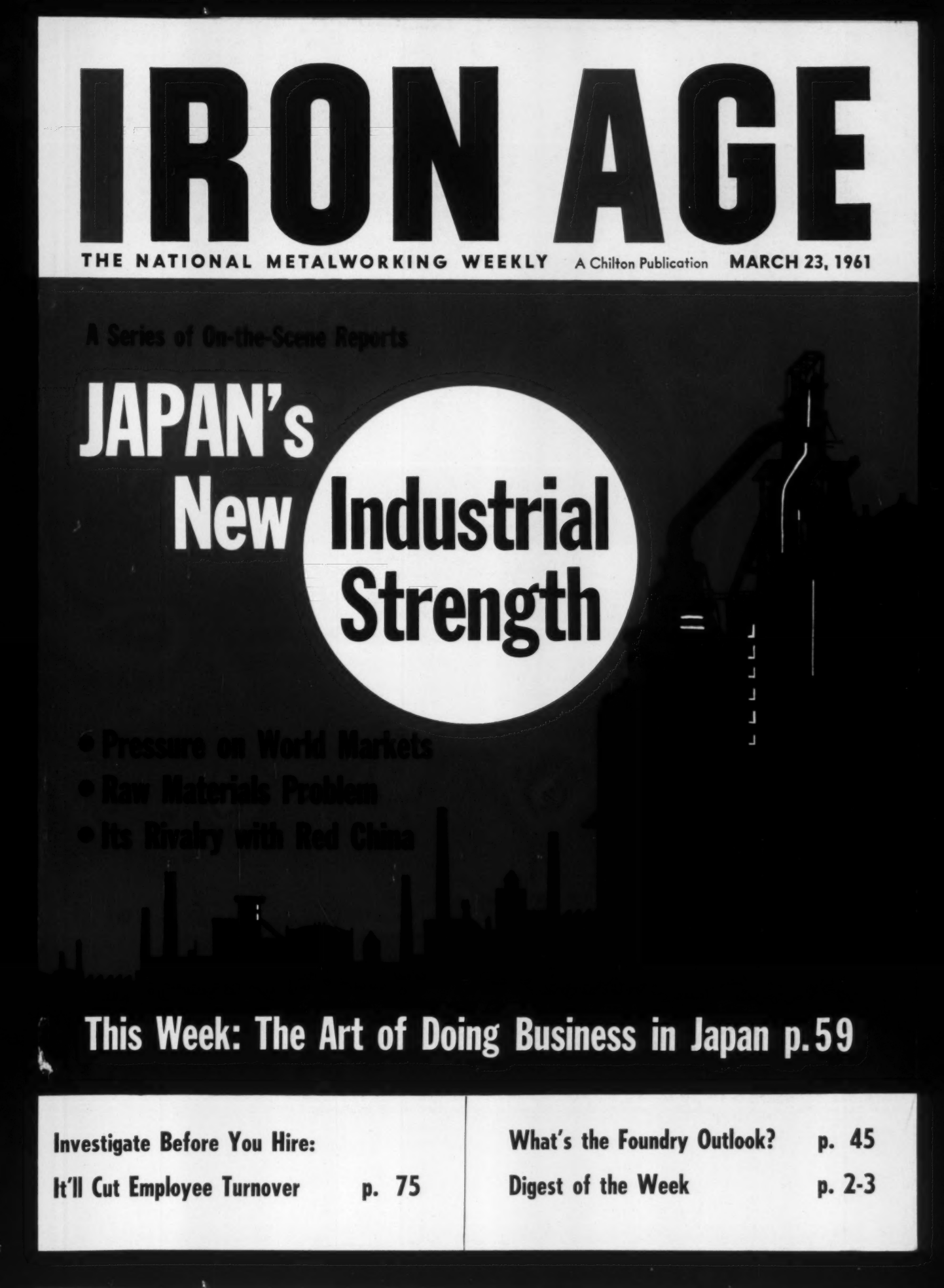
IRON AGE

THE NATIONAL METALWORKING WEEKLY A Chilton Publication MARCH 23, 1961

A Series of On-the-Scene Reports

JAPAN's New Industrial Strength =

- Pressure on World Markets
- Raw Materials Problem
- Its Rivalry with Red China



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Investigate Before You Hire:
It'll Cut Employee Turnover p. 75

What's the Foundry Outlook? p. 45
Digest of the Week p. 2-3

if you can't tolerate seizing and galling

NITRALLOY (leaded*) is a special hard-surfaced alloy now used by Hartford Machine Screw Company, Division of Standard Screw Company, for distributor rotors in Roosamaster fuel injection pumps. It possesses exceptional wear resistance, dimensional stability, and—most important for close tolerance moving parts—a minimum tendency to seize and gall in operation.

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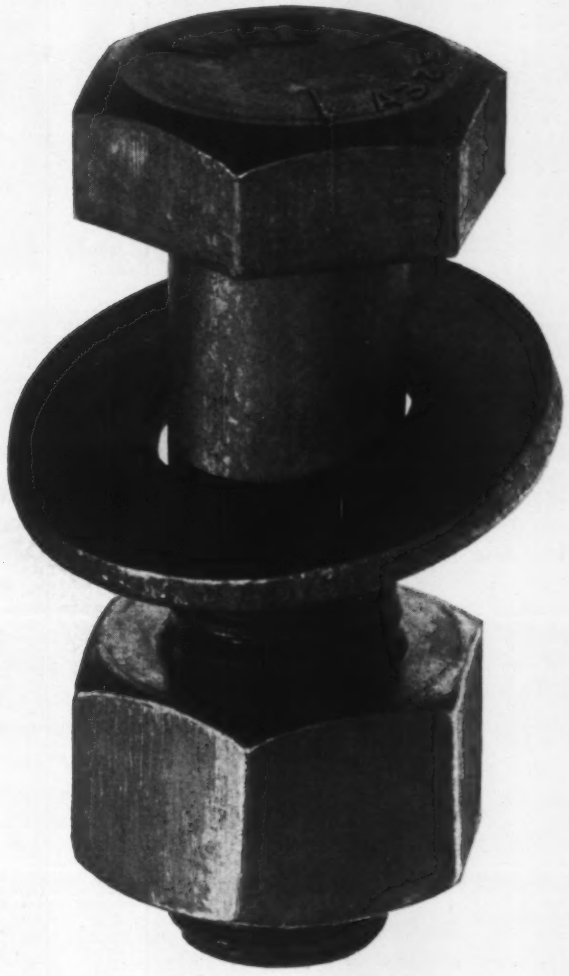

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March 23, 1961—Vol. 187, No. 12

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Special This Week

Business Methods in Japan

If you are making a business venture in Japan, you will find a far different set of rules there. In this first of a series of close-ups of Japanese industry, Editor-in-Chief Tom Campbell gives his impressions on the art of doing business in Japan—as he observed them first hand. ***p. 59***

Founders Disagree on '61

Steel founders aren't agreed on the prospects for 1961, but a number of them have noted a definite improvement in activity. The more optimistic say the business is there if you want to go after it. ***p. 45***

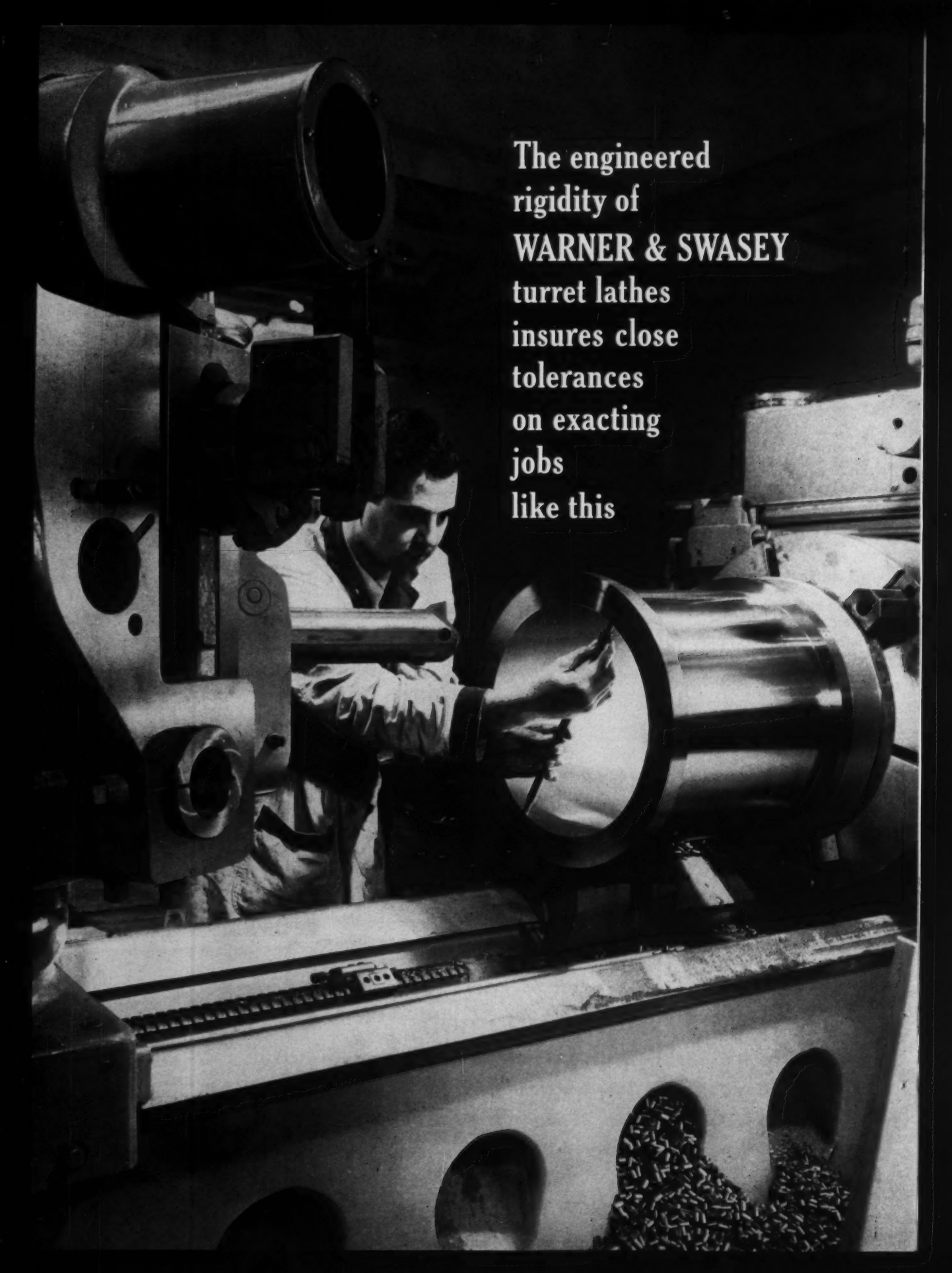
How to Hold Skilled Workers

As soon as you've trained a man for a complex job, he decides to quit. Why? He may be a drifter, or he may feel that he's not the man for the job. Pre-employment checks can predict his actions in advance. ***p. 75***

Next Week

Computers in Management

Computers in many businesses are doing more than supplying information. They are making management decisions and executing them. It depends on the company and conditions, but it's a trend to watch.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like this

Report From Japan

The Red China Question: More Bothersome All the Time

Sooner or later, we must make up our mind about Red China and the United Nations. It won't be easy to do. It will take far more time and patience than appears to be needed.

Looked at from here in the Far East, our problem is a hard one to face. The easiest thing might be to drop all our past resistance and follow the easy path suggested by the British. That would be a false step.

Were we to agree to vote for the admission of the Red Chinese to the UN, it would please the Soviets, and perhaps the British, no end. But it is hardly likely that it would please Japan and other Far Eastern nations.

On the surface, we are being pressured to take a "mature" view of the Red Chinese. The story smacks of the old dodge: "No, the Chinese are not communists they are only agrarian reformers who act like communists." We were taken in by that one before.

President Kennedy and his advisors have the right slant on the whole matter. They, like the Eisenhower Adminstration, do not intend to be a pushover for the Red Chinese. Nor is there any chance that we will throw our Nationalist Chinese friends overboard.

Until such time as the Red Chinese show a semblance of being cooperative, there is no reason at all why the United States should consider any move to allow them into the UN. True, the pressure will be severe with the story that they are here, they are a fact of life, and the USA should be mature enough to realize it.

Americans are still held prisoners by the Red Chinese. American newsmen are not allowed in China. Other actions by the Red Chinese indicate that they hate us with a fervor that apparently surprises Mr. Khrushchev.

So, until such time as we Americans decide when is the right time for the reed to bend a little, there should be no change in our attitude towards these people.

Certainly we would lose face in this part of the world were we to fall supinely for the British line that the Red Chinese should be in the UN.

Japan, India, and other countries in this part of the world well know the Reds. They also know that America has much at stake in attempting to gain freedom for the U. S. citizens who have been prisoners for years in China.

There is nothing to be gained by us in supporting a move to get the Reds into the UN. Let us not fall for the soft line and do something that would haunt us in Asia for untold years.

Tom Campbell

Editor-in-Chief

Spotlights on standards...

*the four American Presidents, carved out of the mountainsides, set standards which contemporary "public servants" might well emulate. This scene is particularly awe-inspiring at dusk, **spotlighted** by Crouse-Hinds, manufacturers of industry's standards in special purpose lighting, explosion-proof electrical equipment enclosures, traffic control equipment, and world-famous condulets.*

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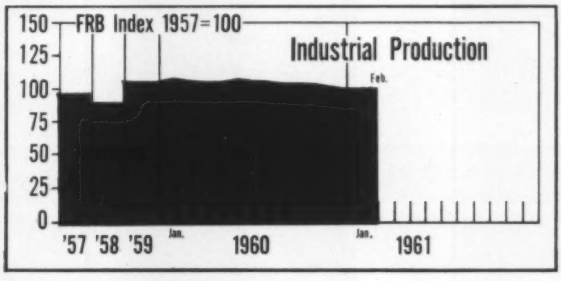
Is the Worst Really Over?

As the first quarter drags to a close, there are definite signs of business gains in the next three months. How big is the question. Nothing on the horizon now would point to more than a moderate pickup. But it does look like the worst is over. Here are some signs:

Most obvious is the leveling of the Federal Reserve Board's index of industrial production. This is after nearly a year of steady decline. Automakers are talking about increases, although modest, in April schedules. Farm implement makers are recalling personnel. Retail sales are picking up. Steel orders are gaining. And housing starts are up. In most of these instances, however, the pickup is less than hoped for. In any case, most businessmen are glad to see the dismal first quarter pass into history. Any change, they feel, has to be for the better.

Production Levels in February

The six-months decline in the FRB Index of industrial production apparently is at an end. It is unlikely that it will drop in March, unless the poor rate of auto assembly held it down. Generally, most businesses noted improvement this month. At 102 (1957=100), the February Index is 9 points below the record set in



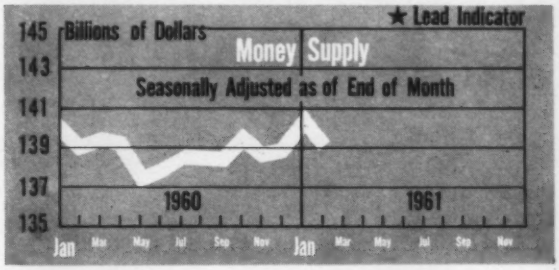
January of 1960. Except for a summer pickup, the decline has been general since then. Most of the total decline is attributed to durable manufacturing, but even that has leveled in current figures.

Steel Prices: What Now?

The decision on whether or not to raise steel prices will probably get its next review in April, when first quarter labor costs can be evaluated. This was indicated last week by Armco president Logan T. Johnston. The first quarter will be the first full quarter of operations following the last wage increase in December of 1960. Returns will provide basis for a new analysis of labor costs. It is recalled that Armco led off the last full round of base price increases in 1958.

Money Supply Drops in February

The nation's money supply (currency outside banks plus demand deposits) took a mild dip in February. The total at the end of the month was $139.3 billion, compared with $140.6 billion at the end of January. The Federal Reserve Board indicates this is not a



reflection of policy. Poor business conditions during the month, plus the problem of coping with the investment flow abroad, resulted in the decline in money supply. It apparently does not, at this time, reflect any deflationary policy.

Automakers Up Production Rate

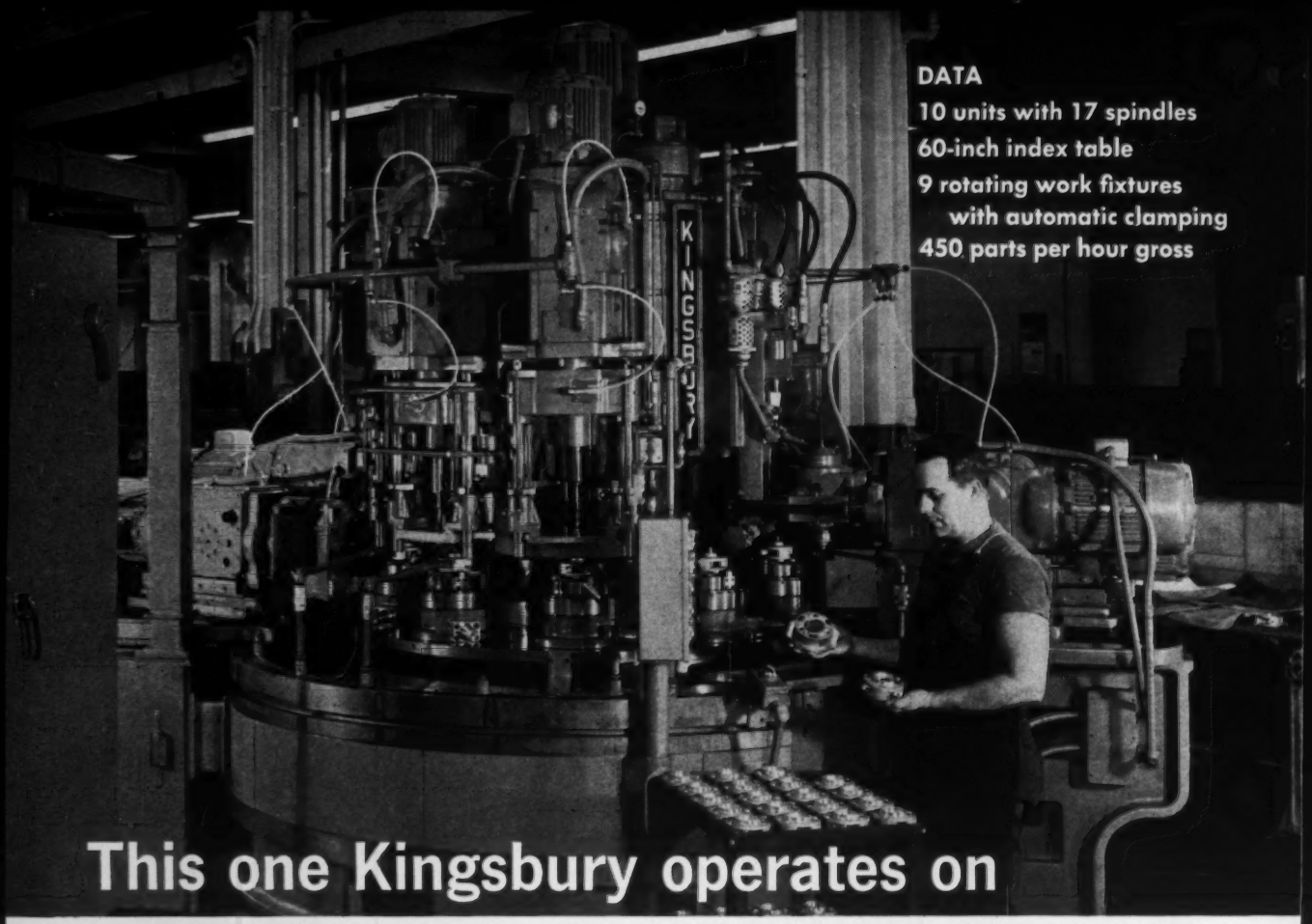
Automakers are talking about better things in the next few weeks. Spurred on by better sales in the early days of March, several auto companies say they will boost output.

Touring Chrysler executives Lynn Townsend, administrative vice president, and Ed Quinn, vice president, sales, told The IRON AGE Chrysler had added 8000 more cars to its schedule at mid-month. Ford spokesmen said second quarter schedules were about 25 pct ahead of first quarter production.

Another vote for the upturn: American Motors reports delivery of 9103 cars in the first 10 days of March. This is up 31 pct from the same February period and is a record for early March sales.

Heavy Trucks Pick Up Momentum

Along the automotive line, the heavy truck business may be moving out of the doldrums. International Harvester, a major producer, indicates that February orders exceeded production. The bulge was large enough for the company to increase production schedules by 18 pct.



DATA
10 units with 17 spindles
60-inch index table
9 rotating work fixtures with automatic clamping
450 parts per hour gross

This one Kingsbury operates on two different parts without changeover

Parts may be fed at random
This center column machine works on the two different parts shown with no changeover. The work fixtures hold either part without changing locators. Each fixture rotates 120° with each index of the table so the horizontal units can perform three sets of operations equally spaced.

Two of the vertical units drill two holes, one in each part. One unit drills Hole A in the bottom of the large part when its flange trips a micro switch. The other unit cycles every time, drilling Hole B in the top of the small part, "cutting air" in the large one.

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—Your machine can go right into your production line because our test runs before shipment guarantee uniform parts that gage.

May we make a proposal? Kingsbury Machine Tool Corp., Keene, N. H.

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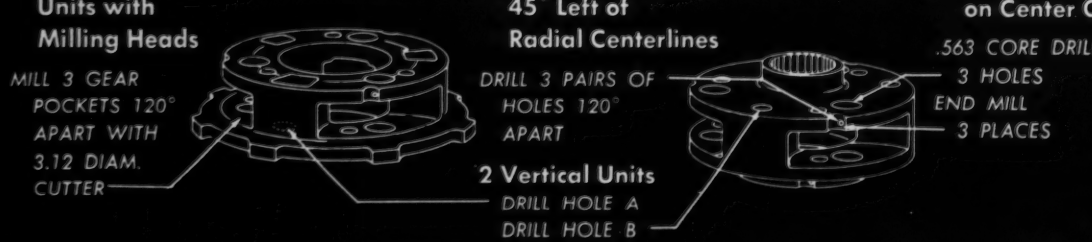
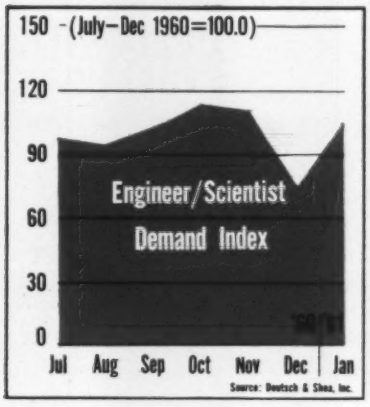

3 Horizontal Radial Units with Milling Heads
MILL 3 GEAR POCKETS 120° APART WITH 3.12 DIAM. CUTTER
3 Horizontal Units 45° Left of Radial Centerlines
DRILL 3 PAIRS OF HOLES 120° APART
2 Vertical Units
DRILL HOLE A
DRILL HOLE B
2 Vertical Units on Center Column
.563 CORE DRILL 3 HOLES
END MILL 3 PLACES

ALUMINUM PLANET PINION CARRIERS FOR AUTOMATIC TRANSMISSION

Demand for Engineers Continues to Ease

Demand for technical people continues its downward trend, according



to the latest Deutsch & Shea Engineer/Scientist Demand Index.

While the January figure of 107.0 is well above the December low of 77.1, the latter figure reflects a seasonal slowdown of recruiting activities. Comparison with November's 111.0 figure shows a lessening demand.

The E/S index has been revised. It is now based on a six-month period, July to December 1960. It was previously based on the single month of July 1960.

UAW: $30 Million Paid In 1960 for SUB

Social Security Dept. of the United Auto Workers says that UAW members received more than $30 million in supplemental unemployment benefits last year.

The union says General Motors Corp. paid out $8.9 million, Ford Motor Co. payments totaled $5.5 million, and Chrysler Corp. payments of $5.2 million. Studebaker-Packard Corp. workers received $1.7 million in SUB payments and American Motors Corp. employees benefited by $168,000.

In the farm equipment and road-building machinery field, International Harvester Co.'s workers received additional layoff benefits of $3.6 million from their fund.

Japanese Steel Union Plans Wage Strikes

Competitive edge that Japanese steelmakers hold over the U. S. industry on labor costs may soon be dulled a little.

The national steel labor union there has threatened to close down the industry this spring. Key to the closing: Getting a wage settlement for Japanese steelworkers soon.

The union's plan calls for hitting one department at a time.

Labor Expert Sees Employment Upturn

U. S. Labor Dept. sees a possible upturn in employment despite worsening of the overall job picture in February. The glimmer of hope comes from the small decline in metals industries jobs.

Seymour E. Worlfbein, Labor Dept. manpower expert, says the decline in jobs in primary metals industries last month was "not sizable" for the first time in many months. Metals industry employment dropped by only 3900.

URW: Drive for Security

The drive by unions for greater job security in the face of increasing automation gets underway in full this week.

Contract negotiations between the United Rubber Workers and both Goodyear Tire & Rubber Co. and Firestone Tire & Rubber Co. opened Monday.

Key demands center on job protection for the workers. The union calls it "a broad program to provide economic security in an age of automation."

The URW is seeking an "automation fund" to aid workers displaced by technological developments. Employers will be asked to underwrite the fund. (Armour & Co. agreed to such a fund last summer in exchange for assurance from meat packing industry unions that they would not oppose automation.)

Other demands include transfer rights for workers and early retirement benefits under company pension programs and Social Security.

URW is probably less serious about its demand for a shorter workweek. At many companies in the rubber industry, the standard workweek is only 36 hours —six hours per day, six days per week.

However, it may prove stubborn in its demand for a limit on overtime when union members are on layoffs. And the union also wants to restrict farming out work to outside contractors. This is designed to protect skilled workers in about 30 crafts that are represented by the union.

Wages aren't an issue at the present time. But, depending on the economic outlook they could become one later this year under wage-reopener clauses.

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★ U.S. May Insure Tool Loans

Administration officials may be toying with the idea of insuring loans to industry to purchase machine tools.

The government insurance program for machine tool purchases may be suggested by the Commerce Dept. It would be built along the lines of the Federal Housing Authority, which insures loans for housing purchases.

This proposal came to light after a private meeting between representatives of the U.S. machine tool industry, Commerce Secretary Luther Hodges and members of his staff.

(For more on machine tools and a tool bank plan, see Machine Tools, p. 67).

Commerce Dept. officials said machine tool builders and representatives of the National Machine Tool Builders Association were acting in an advisory capacity in their meeting with Sec. Hodges. "It was an exchange of views on the problems of the machine tool industry," government officials said.

The IRON AGE learned that the "exchange of views" was very pleasing to the machine tool men.

Problems of machine tool obsolescence and ways of increasing machine tool sales were taken up at the meeting.

Commerce officials spoke of liberalization of machine tool depreciation and of setting up a program of reinvestment credits.

This program is said to be specifically for the machine tool industry. Apparently, it will not be connected with general U.S. depreciation plans or with President Kennedy's plans for special tax incentives for investment in new plant and equipment.

Sec. Hodges appeared very sympathetic to the problems of the machine tool industry. He assured those attending that the Commerce Dept. would take steps to aid medium and large machine tool builders.

■ Defense Gives More To Small Business

Government defense contracts to small business will be increased 10 pct for the year beginning July 1. And some increases will be made before that date.

This increase in prime military contracts placed with small business will amount to almost $350 million. The increase was ordered by President Kennedy.

The Defense Dept. acted on the President's order immediately. The Army, Navy and Air Force were instructed to boost small business orders immediately, and at least 10 pct in the new fiscal year.

The instructions came from Deputy Defense Secretary Roswell L. Gilpatric.

Last year military contracts to small businesses amounted to $3.44 billion.

■ Policy Clampdown On Tools for Reds

The Government is setting up a new policy on machine tool trade with Russia. It is expected to mean a clampdown on machine tool exports to the USSR.

Secretary of Commerce Luther Hodges says he is now working on a consistent policy for machine tool trade with Russia.

Latest indication of the clampdown was the cancellation of an export license for the sale of $6 million worth of tools for making motor vehicles and farm equipment.

This followed closely the controversial cancellation of a license for shipment of $1.5 million of ball-bearing-making machinery to Russia.

■ Bob K. Gives Word: No Antitrust Letup

There will be no letup in the government's continuing antitrust push. It is evident that the recent conviction of electrical manufacturers for antitrust violations was a stern warning to industry.

KENNEDY: A stern warning.

The Justice Dept.'s antitrust division has gotten the word from Attorney General Robert Kennedy to keep the pressure on companies suspected of bid-rigging and price-fixing.

Meanwhile, the Senate antitrust subcommittee headed by Sen. Estes Kefauver announced plans to investigate the whole question of antitrust violations.

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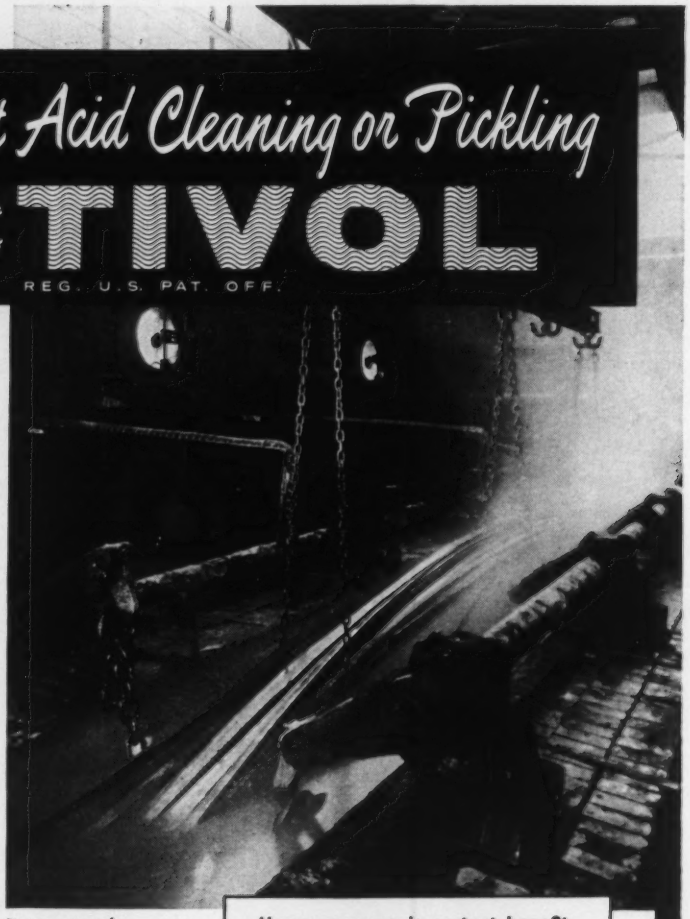
REG. U.S. PAT. OFF.



CLEAN METAL BETTER *at Lower Cost*

•

KILL FUMES

•

REDUCE PITTING

•

RINSE COMPLETELY

Photo courtesy of PRECISION DRAWN STEEL CO.

Activol is a series of original chemicals that control and regulate the action of acid on metals for quicker or more effective removal of scale, rust, grease and salt deposits in acid baths. Cleaning and descaling can be accelerated or controlled while inhibiting the action of the acid on the base metal. Metals come out cleaner and brighter and at the same time the "bite" of acid fumes is reduced to a minimum.

There is an Activol powder or liquid for every purpose in pickling, acid cleaning, removing calcium or magnesium salts, preparing metal for painting and other acid cleaning operations.

Here are some important benefits ACTIVOL gives you:

1. **Controls or accelerates acid action while inhibiting the effect on base metal**
2. **Removes scale and rust, cleans off oil, grease and salt deposits without pitting or etching**
3. **Non-colloidal ACTIVOL reduces hydrogen embrittlement**
4. **Acid often lasts as much as 50% longer, requires less frequent replacement**
5. **ACTIVOL reduces fumes and odors**
6. **ACTIVOL is not a coal tar derivative—is completely soluble in all acid solutions**
7. **Compatible with any organic or inorganic acid**
8. **Costs less to use than other inhibitors**

Write, wire or phone for help on specific problems or further information on ACTIVOL additives.

HARRY MILLER CORP. HAMICO 4TH & BRISTOL STREETS PHILADELPHIA 40, PA.

Manufacturers of
IMMUNOL, STEELGARD, ACTIVOL,
HAMICOTE, HAMIKLEER

HARRY MILLER CORP.

Original Products and Processes Since 1936

4th and BRISTOL STS., PHILA. 40, PA.

DAvenport 4-4000

Service Representatives in Principal Cities

Lower Tax Break To Overseas Subsidiaries

Congressional backing is growing for legislation ending tax incentives to company subsidiaries overseas.

The legislation would tax the profits of "subsidiaries" abroad the same as foreign "branches." Branches are taxed on profits the year in which they are earned. Subsidiaries are not. U. S. taxes on subsidiary profits are not paid unless the profits are returned here.

Sen. Albert Gore, (D., Tenn.), sponsor of the bill, says:

"This bill makes two basic changes in the Internal Revenue Code. Taken together, these changes will, in my opinion, repeal major preferential tax treatment for income earned abroad and thereby remove an incentive to the movement of capital overseas. This tax-stimulated movement of capital abroad has resulted in loss of jobs and productive capacity here at home, and has added to our balance of payments deficit and gold outflow."

Slow Metal Activity

Canadian sources predict a slow year for metal producers there. Copper, lead and zinc are not expected to show great strength. Uranium production this year will probably fall below 1960 levels also. And the slowdown in iron ore developments will likely continue through 1961.

More Russian Aid To India's Economy

Increased Russian economic aid to India's third Five-Year Plan is expected.

Soviet Deputy Premier Kosygin recently completed a 12-day visit to India. He speaks of prospects for "further fruitful collaboration" between the two countries. Russia, he says, was always prepared to share her technical knowledge and material resources with India.

Mr. Kosygin also announced the Reds will help expand production of the Soviet-built steel mill at Bhilai. Production should reach three million net tons during the next five years, he says.

U.S.S.R. has promised more than $500 million in economic aid to India.

Federal Outlays Aid U. S., Canada

A leading Canadian bank believes the economy of both Canada and the U. S. is nearing a turning point.

Says the Bank of Montreal's Business Review for February: "Possibly one of the most positive influences in both countries in the months ahead will prove to be the actions already taken or announced by the federal governments in raising their outlays."

However, the bank notes that further improvement of Canadian and U. S. exports may be hurt by slackening business overseas.

Exports, Imports Drag in January

U. S. exports, which gained steadily in the fourth quarter, dropped off in January. Imports were also down, but the drop was not as severe.

Exports in January totaled $1.5 billion. That's a 12 pct drop from December's $1.7 billion. January's imports fell from $1.2 billion in December to $1.1 billion—a 3 pct drop.

The Dept. of Commerce says the decline reflects less exporting in all but two of the 11 major commodity groups. Among these are machinery and vehicles, and metals and metal products.

On the other hand, imports of metals and metal products rose in

January. The overall situation reflects a slackening of European and Japanese production.

Johnston Calls For American Innovations

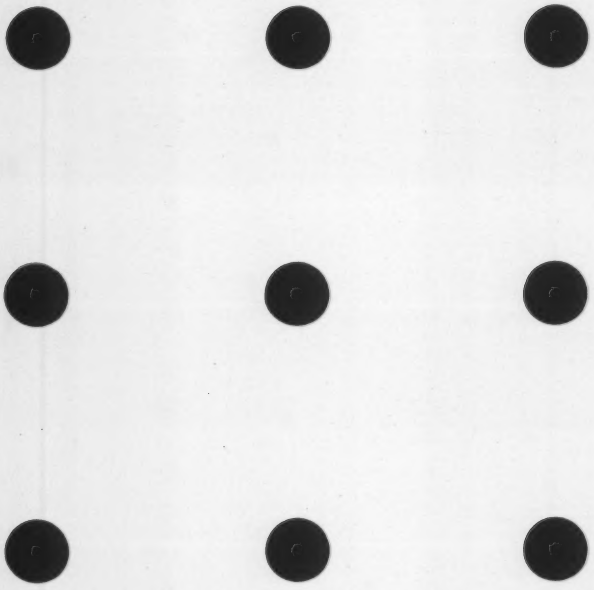
A plan termed the "silent invader" has been offered as "a positive program designed to aid American industry in its struggle with foreign competition."

The program comes from Logan T. Johnston, president, Armco Steel Corp.

He feels the "American talent for innovation is the real key to our nation's future."

Says Mr. Johnston: "When our competitor can provide the same product we are selling today, we must have a new development to offer. And when he matches that one, we must have a third ready to market.

"Our talent for innovation is a force so potent that perhaps we ourselves have not yet realized its full power."



Can you connect these dots thru their centers using four straight lines without your pencil leaving the paper?

There's no *obvious* solution to this problem. But a look beyond the obvious will produce a very simple answer.

Going beyond the obvious *often* pays dividends. At Ryerson we've made a science of this and call it *Metalogics*.

How does Metalogics work for you? It helps you value-analyze any kind of problem in the selection and application of steel, aluminum, industrial plastics and metal-fabricating machinery. It searches out money-saving and money-making ideas. And then it follows through with day-in, day-out service on steel and aluminum from stock that also goes "beyond the obvious" in caliber and scope and dependability.

Ask your Ryerson representative to show you how you can get the greatest possible value from this unique Ryerson service. He'll be glad to tell you—and you may be very glad you asked. (Incidentally, for answer to dot-connecting problem, see page 52.) Joseph T. Ryerson & Son, Inc.—Service Center Plants Coast to Coast.

Mechanical Plating

Mechanically-plated zinc or cadmium coatings, produced by impact action in a wet tumbler, can be economically and uniformly applied to 0.0005 in. in thickness. These plated coatings resist salt-spray and other corrosive attacks. Advantages of the mechanical-plating method include: No hydrogen embrittlement; uniform plating thickness; no discoloration of parts; and the elimination of all follow-up aging processes.

Continuous Casting Plant

During the period 1963-64, a 13-strand continuous casting plant will go into operation at Shelton Iron & Steel Ltd., Stoke-on-Trent, England. This installation will consist of two 4-strand units, one 3-strand machine and one 2-strand machine. With all units operating, the plant's top capacity will be 800,000 tons of steel billets and slab sections per year.

Computer Aids Steelmaker

Two basic-oxygen steelmaking furnaces, now under construction for the Jones & Laughlin Steel Corp., will be equipped with an electronic computer. This special-purpose computer will work out the proper "recipe" for making steel. It's designed to calculate the proportions of hot metal, scrap and lime in each charge. Then it pinpoints optimum tapping temperature.

New Assembly Concept

When mechanized methods can't be justified, a simple approach commonly called "individual build" pays off. It's most effective on short runs. As opposed to progressive assembly, one operator completes the entire job. Parts are brought to him by mechanized means.

Improves Seamless Tubing

Steel mills are adapting 100 pct non-destructive testing of billet stock for seamless tubing. New units monitor billets throughout entire processing cycles. Several mills are considering the use of this test equipment for slab stock. All slabs would thus undergo 100 pct inspection. Fully-inspected slabs would be earmarked for pipe skelp in fluid-transmission lines where rising pressures continue to boost quality needs.

Fluid Mold Cuts Defects

Forging ingots obtain a high-quality surface finish with a new process called Fluid Mold Casting. In this process, special molten slag lines each mold, covering all flaws such as pits and cavities. This reduces forging defects which tend to crop up at seams and lap sections.

Heat Becomes Electricity

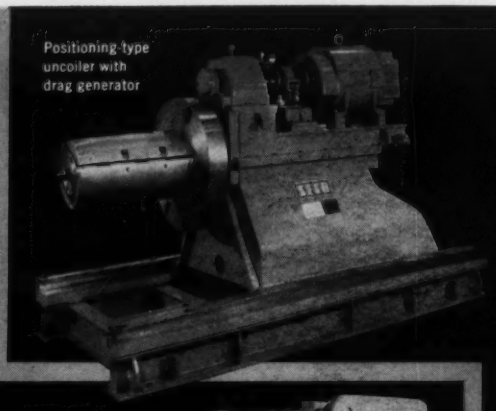
Two years ago, thermoelectricity—the direct conversion of heat into electricity—was only a lab curiosity. Today, a small-scale production line at Westinghouse's new products laboratories

MODULAR COUPLES: For 5000-w power.

proves this new power-generation method has become a practical reality. On this line, final assembly and tests are performed on thousands of thermoelectric couples. These couples form the world's largest thermoelectric generator.

Dampen Vibrations

Galvanic coatings help to dampen vibrations in steel assemblies. Tests show the chrome plating proves most effective at ambient temperatures. When vibrations are less severe, tin coatings can serve as a dampening agent. After studying the effects of heat on the dampening capacity of plated coatings in the 150°-250°C range, Russian scientists advise that cadmium coatings give best results at elevated temperatures.



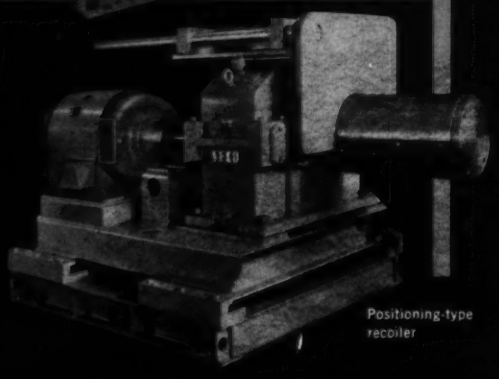
Positioning-type uncoiler with drag generator

Predictable Performance

for processing lines with

SECO

terminal equipment



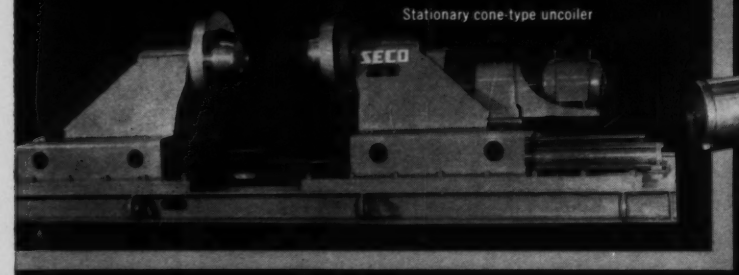
Positioning-type recoiler

From entry to exit, new and modernized processing lines . . . annealing, pickling and others . . . perform better with SECO terminal equipment. This equipment handles coils ranging from 10,000 to 50,000 pounds with speed, convenience, safety.

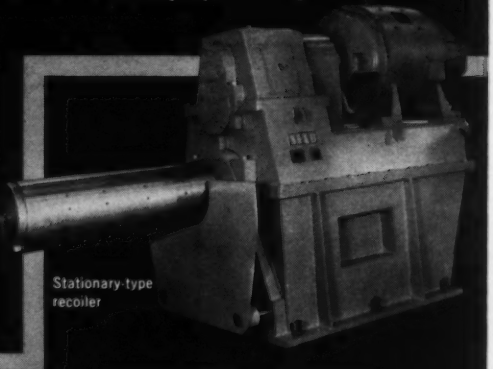
SECO uncoilers and recoilers are designed to operate at any speed the mill requires, are available in positioning or stationary types. The positioning types feature a slideable reel base mounted on a sub-base for alignment with the processing line, actuated by an automatic edge control.

SECO also makes auxiliary equipment such as coil cars with coil lifts to simplify uncoiler loading and recoiler unloading. Available for mandrel or cone-type reels.

A staff of trained sales engineers will assist you in finding the equipment best suited to your needs. Call or write today. West Coast representative: United Machine Tool Company, Los Angeles.



Stationary cone-type uncoiler



Stationary-type recoiler

SECO STEEL MILL EQUIPMENT

- Leveling and Shearing Lines
- Combination Edging and Flattening Lines
- Tension Reels for Strip Polishers
- Narrow Strip Grinding Machines
- Slitting Lines
- Multiple Strand Pull-out Rolls and Take-up Frames
- Strip Coilers (Up and Down Type)
- Traverse Reels for Narrow Strip
- Steel Coil Up-enders
- Scrap Ballers

STEEL EQUIPMENT COMPANY

P. O. BOX 737, WARRENSVILLE STATION • CLEVELAND 22, OHIO

Affiliated with Lee Wilson Engineering Co., Inc.

TECHNICAL ASSISTANCE

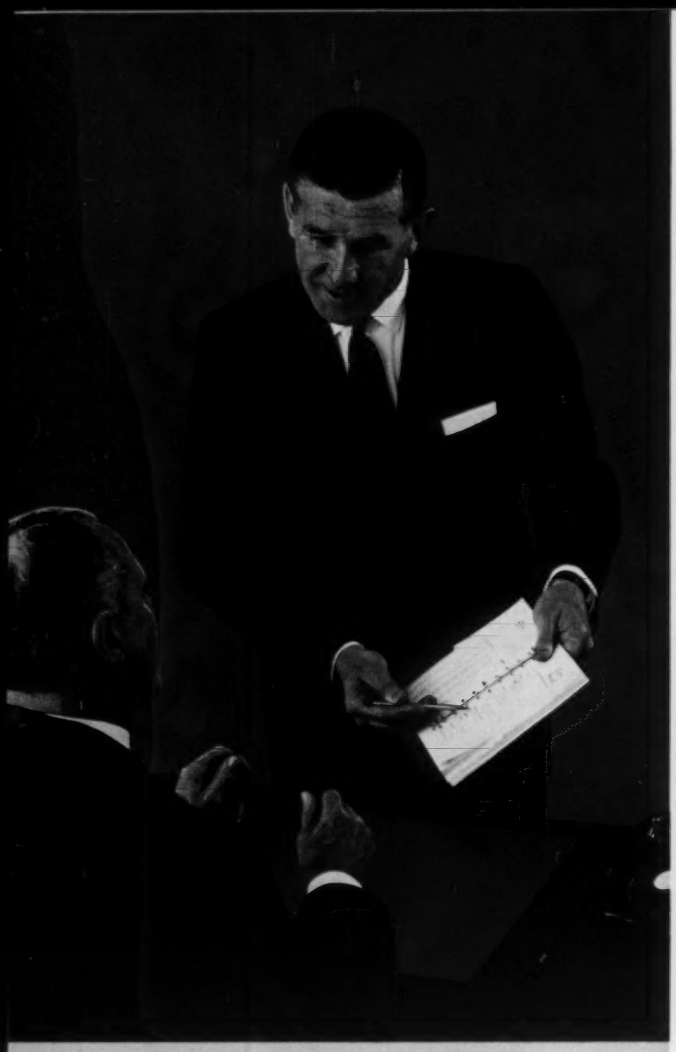
LARGE STOCKS

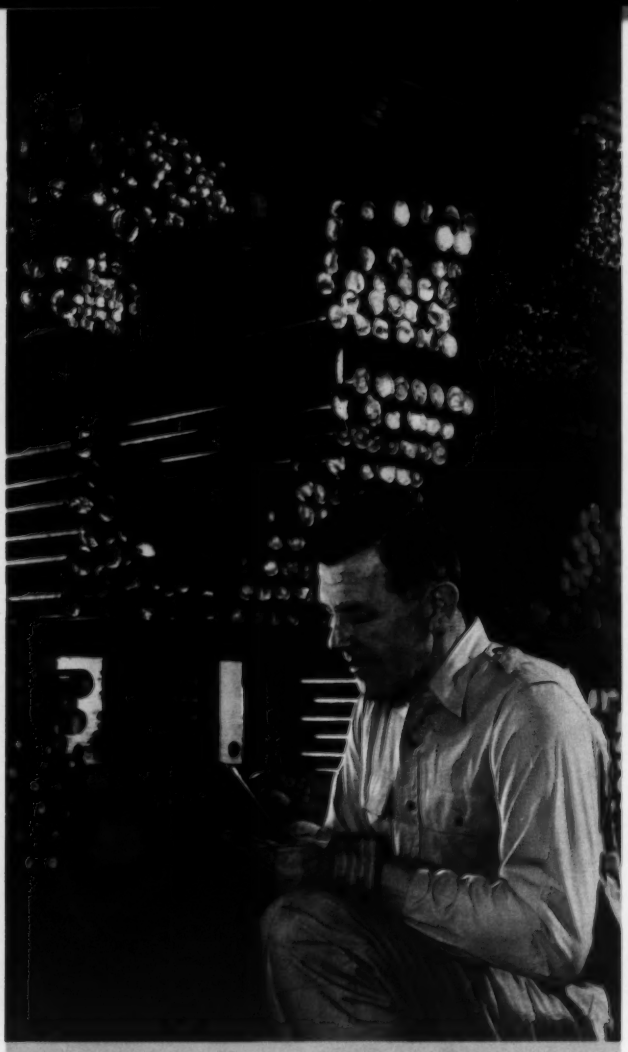
MODERN PROCESSING

QUICK DELIVERY

Your Steel Service Center serves you in all these ways

BETHLEHEM STEEL





TECHNICAL ASSISTANCE

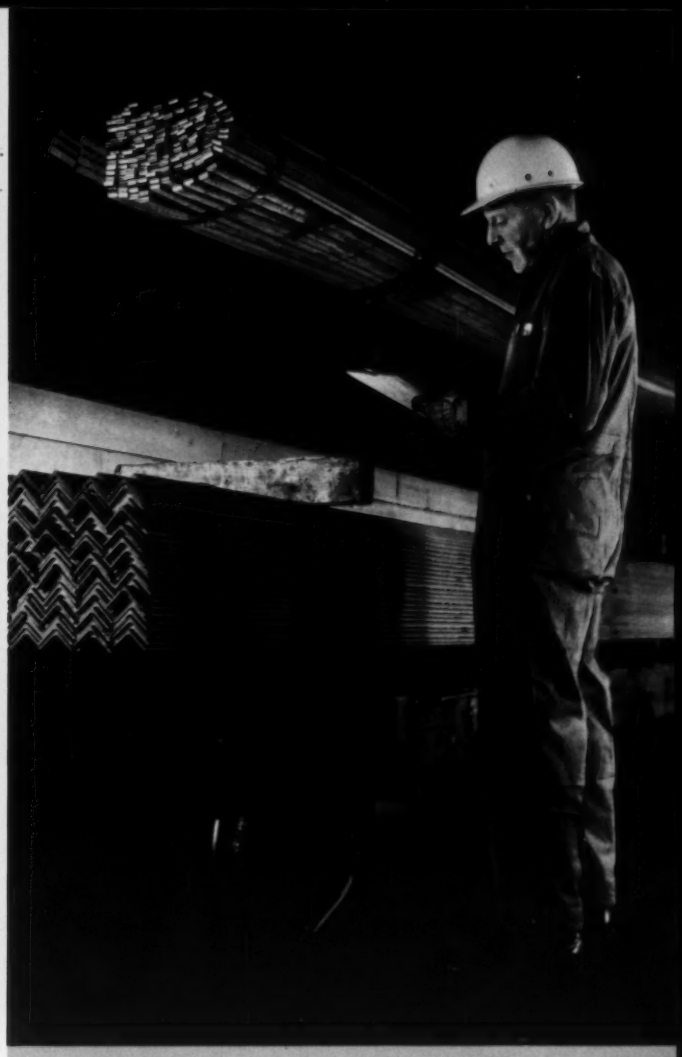
Your Steel Service Center representative will advise you on the selection, fabrication, and application of steel. He is trained for the job. He offers a vast fund of technical experience gained through close cooperation with manufacturers on a great variety of steel application problems.

LARGE STOCKS

Steel Service Centers select their steel stocks to meet the needs of the areas they serve. They store your steel for you. You reduce your inventory costs, release tied-up capital, reclaim storage space for more productive use. And you get the right steel when you need it.

Call your Steel Service Center for the right steel... delivered quickly from stock, ready for use

STEEL SERVICE CENTER INSTITUTE



MODERN PROCESSING

You can have your steel delivered ready for use . . . tailored exactly to your needs. Steel Service Centers are usually equipped for services such as flame-cutting, shearing, sawing, slitting, cutting, leveling, testing. You can eliminate expensive handling equipment and labor.

QUICK DELIVERY

Fast delivery can be made by truck from most Steel Service Centers. They can set up delivery schedules any way you want. In emergencies, the steel you need can usually be rushed to you in a matter of hours.

Your Steel Service Center representative is a good man to get acquainted with. He knows steel . . . and what can be done with it. He can draw freely on a staff of technical experts. He's set up to handle your steel needs—especially if you need steel fast, if you need steel only occasionally, or if you need steel in limited quantities.

BETHLEHEM STEEL

BETHLEHEM STEEL

Steel Service Centers stock these Bethlehem products

plates • shapes • bars
sheets • tool steels • alloy steels
and other steel products

Bethlehem Steel Company, Bethlehem, Pa.

Export Sales: Bethlehem Steel Export Corporation

Steel

for strength
...economy
...versatility

BETHLEHEM STEEL

HOW TO FIGURE YOUR REAL COST OF POSSESSION FOR STEEL

Insert figures for each cost in appropriate spaces. The resulting totals will give you a true comparison between the "price for inventoried steel" and the cost of buying it from your Steel Service Center.

COST OF POSSESSION FOR STEEL IN INVENTORY

Per ton delivered _____

Cost of capital:
- Inventory _____
- Space _____
- Equipment _____

Cost of operation:
- Space _____
- Materials handling _____
- Cutting and burning _____
- Scrap and wastage _____

Obsolescence _____
Insurance _____
Taxes _____

TOTAL _____

COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered

TOTAL _____

Union Power

Sir—I was particularly impressed by your recent editorials entitled "Righteous Indignation" and "Double Standards." Unquestionably, you speak for a sizable group of citizenry when you predict that the man on the street "has had it." We certainly can agree that price-fixing in the electrical industry is a blight on our free enterprise system.

Both retired Secretary of Labor James Mitchell and incumbent Arthur Goldberg stress the need for statesmanship in labor-management affairs and the necessity for a realization by the general public of the serious threat that foreign competition has posed and will continue to pose to American business and industry. Yet our major problem remains, in the solution of these problems, in restricting the monopolistic power of big unions. As you have related, these unions can permit 642 tug and ferry-boat workers to cause far-reaching problems to more than 100,000 people. Also, a few flight engineers can seriously inconvenience air travel and cause unemployment for 80,000 fellow employees. Certainly many of our economic problems today are due to the disruption which our major strikes cause reflecting lost buying power and taxes.

Speaking of double standards, why not a single standard applying to both big business and labor? If the Sherman Anti-Trust Act seeks to prevent monopolistic power in big business, why should it not equally apply to the big labor monopoly?—A. B. Williamson, vice president, McGill Manufacturing Co., Inc., Valparaiso, Ind.

Answers Needed

Sir — Your editorial "Double Standards: They Can Cause Anguish" in the Feb. 16 issue of The IRON AGE brings up many questions which can only be answered by the company heads who disclaim any responsibility for the action for which men in the lower echelons are now paying the penalty.

If, as they claim, they didn't know what was going on, I believe the stockholders of all companies involved should do something about getting new top management.

I take my hat off to those men who pleaded guilty, realizing the impact this is going to have on their families and future business opportunities. We taxpayers were saved a considerable sum in court costs by their actions.

Top executives in all business enterprises should take any steps necessary to clean house, if needed, and to correct policies to prevent a repetition of the need of men serving prison sentences for policies which were in effect.

All corporations are fighting an uphill battle against unfavorable accusations made from many quarters to be respected members of the communities where each is located. —Roy H. Larson, vice-president, Indiana Forge and Machine Co.

From Rockefeller

Sir—Governor Nelson Rockefeller appreciates very much the attention given by The IRON AGE to the recent trip he and Commissioner McHugh (I.A., Feb. 2, '61, p. 71) made to Los Angeles. He was pleased to have had the opportunity of meeting your West Coast editor. —Robert L. McManus, Press Secretary to Governor Rockefeller, Albany, New York.

Rates High

Sir—Your article "How to Boost the Efficiency of Supervisory Personnel" in the Feb. 16 issue of The IRON AGE was one of the most interesting articles on this topic that I have read in quite some time. —Theo. A. Garner, Terminal Metal Products Corp., Brooklyn, N. Y.

MARIAN A. STACHOWIAK,
Hayes Induction Heating Engineer, reports . . .

SELECTIVE HEAT TREATING CAN BE SIMPLE...

when equipment and application know-how go to work

High-Frequency Induction Heating . . . standard procedure for selective hardening, melting, annealing, brazing, preheating, hot forming, sintering, and vacuum heating . . . now takes a big step forward with another Hayes development — a new high-frequency induction unit that puts selective heating on a *simple* and *economical* basis.

PUSH-BUTTON Controls are featured with this new Hayes induction heater to obtain instant and exact heat distribution at any desired surface area of a steel part. Heating and quenching cycles are *automatically controlled* and are so rapid that distortion, decarburization, and excessive oxidation are practically eliminated. Protective atmosphere systems (pioneered by Hayes) can be supplied as an integral part of the induction unit.

UNIT Design Saves Space — because heater stations and power generator are incorporated in *one* compact cubicle...for more output per sq. ft. of floor space. Moreover, the Hayes unit includes work handling devices which can be set up simply, integrated into your production line, and operated as easily as any other machine tool.

Safe, Easy Maintenance is another feature of Hayes' design. Easy-access panels provide plenty of working room for maintenance and adjustment of components. Safety interlock switches throughout shut off plate power when panels are opened. Write for information on Hayes new induction heating unit, work tables and accessories . . . or other "Results Guaranteed" furnaces in Hayes Certain Curtain line.

FREE BULLETIN N-1

C. I. HAYES, INC.

821 WELLINGTON AVE. • CRANSTON 10, R. I.

ELECTRIC FURNACES

Established 1905

It Pays To See Hayes for metallurgical guidance, lab facilities, furnaces, atmosphere generators, gas and liquid dryers, pHayes-master (TM) control units.

500 gallons of insurance against fire hazards

Because the "solvent" in this dip tank is plain old fireproof water, even a flame from a torch won't set the finish on fire. It's a Glidden water-reducible finish, containing no volatile solvents, no combustibles, no explosive fumes, no toxic or irritating chemicals.

Water-reducible finishes let you apply more paint in one application than with solvent systems. Costs are competitive with those of solvent-type finishes.

Glidden will help you switch to water-reducible finishes for your products. Ask your Glidden salesman for information on the complete line including new gloss finishes.

QUALITY Glidden PRODUCTS

FINISHES FOR EVERY PRODUCT
The Glidden Company
INDUSTRIAL PAINT DIVISION
900 Union Commerce Building • Cleveland 14, Ohio
In Canada: The Glidden Company, Ltd., Toronto, Ontario

No matter what your product, process, or problem, Glidden finishes plus Glidden Technical Service can provide the answer.

Views From the East

This week, on p. 59, you'll find the first of a series of articles about business in the Far East by IRON AGE Editor-in-Chief Tom Campbell.

This story, on how to conduct business talks in Japan, will be followed by others in the weeks to come. As we mentioned earlier, they'll cover many aspects of business and industry in that vital area. Next week's story, for example, analyzes the Japanese labor picture.

After leaving Japan, Tom will visit Hong Kong and Bangkok before returning home.

As you'll notice in the picture below, Tom lost little time in getting down to work. And the material he's sent back so far indicates this series will be really meaningful.

Automatic Management

Every day we hear about another function of business being taken over by computers. And, occasionally, computer people like to set up problems that have their funny side.

We got a laugh from a University of Pittsburgh story the other day. It's about the men who program computers amusing themselves by teaching the electronic brains to play games such as checkers and three-dimensional tic-tac-toe.

Modern Method—This attracted our interest because we had just received from our Pittsburgh editor G. J. McManus, a draft of next week's Special Report. It's an analysis of how computers are making automatic management a reality in many areas of industry.

You can read about the functions that computers are performing in day to day operations of some of the largest corporations (and smaller ones, too). Like us, you may get the feeling that maybe the almost human computer needs a bit of relaxation after a day of performing hundreds of functions. Some typical ones: Receiving orders, selecting warehouses, sending out shipping and inventory orders with dispatch, and all with little or no complaint about whether it's overworked or not.

TOKYO TALK: Tom Campbell, IRON AGE Editor-in-Chief (left), talks things over in Tokyo with Earnest Hoberecht, United Press International's vice president and general manager for Asia. (See story, above.)

CAR HEARTH FURNACES
FOR
HEAT TREATING
STRESS RELIEVING
ANNEALING
HOMOGENIZING
600°F TO 2500°F

DIRECT FIRED OR FORCED CONVECTION, OIL, GAS, ELECTRIC

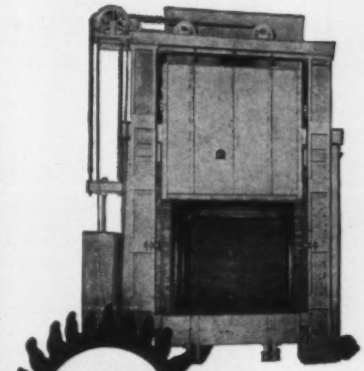
R-S CAR HEARTH FURNACES are batch type furnaces with movable hearth for ease of loading and unloading. They can be designed to your specifications as direct fired units for temperature range from 1000° to 2500°F. or as forced convection units from 600° to 1600°F.

R-S CAR HEARTH FURNACES can be built to utilize oil, gas or electricity, whichever is the most economical for your plant. Whatever the charge weight, length or width required R-S engineers can design and build the furnace to meet your requirements most efficiently.

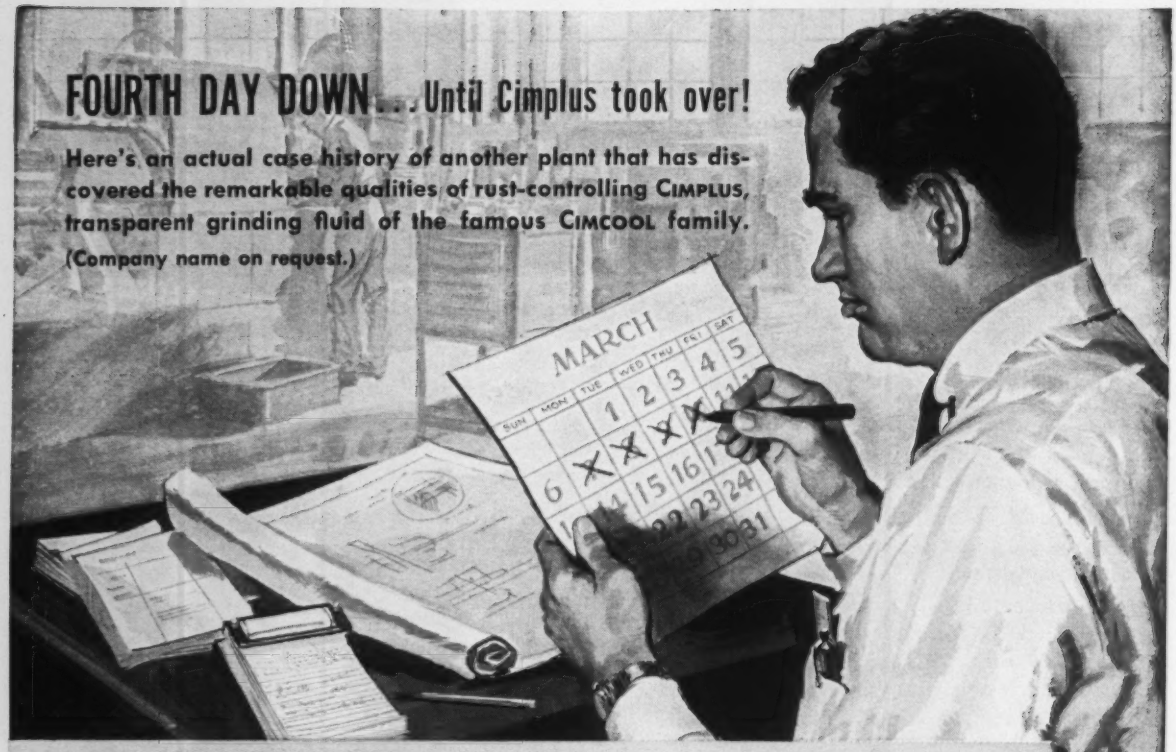
R-S CAR HEARTH FURNACES have proved themselves throughout the world. In foundries for heat treatment of steel and iron castings. In metal working plants for stress relief of weldments, annealing, normalizing, spherodizing and forging, or to heat for rolling, forming, or forging.

For full details on R-S Car Hearth Furnaces write to...

R-S FURNACE CO., INC.
NORTH WALES, PA.



R-S FURNACES



FOURTH DAY DOWN... Until Cimplus took over!

Here's an actual case history of another plant that has discovered the remarkable qualities of rust-controlling CIMPLUS, transparent grinding fluid of the famous CIMCOOL family.

(Company name on request.)

FIELD SERVICE REPORT

The job was grinding cast iron machine tool parts on three rotary surface grinders with an 1800 gallon central cutting fluid system.

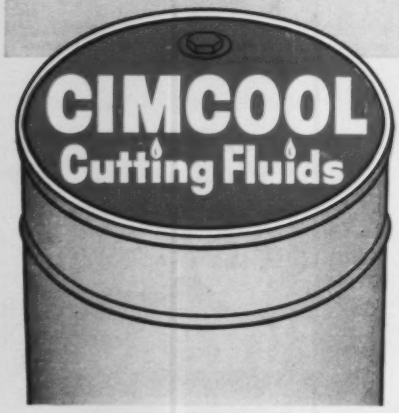
The coolant they had been using had let the sludge cake up and clog up the lines and they had been shut down for four days. Then we installed Cimplus at 100 to 1 dilution and the problem was solved.

Since Cimplus took over, they've had no sludge trouble at all. The swarf and grit settles nicely for them, but it doesn't cake. They're also real pleased with the rust prevention on the cast iron parts that Cimplus gives them.

Kent Reece

N. Y. Office

Page 2



FOR 100% OF ALL METAL CUTTING JOBS

Production-proved products of The Cincinnati Milling Machine Co.

CIMCOOL S2 Concentrate — The pink fluid which covers 85% of all metal cutting jobs.
CIMPERIAL° — Newest in the famous, industry-proven line of CIMCOOL° Cutting Fluids.
CIMPLUS — The transparent grinding fluid which provides exceptional rust control.
CIMCUT Concentrates (AA, NC, SS) — For every job requiring an oil-base cutting fluid.
ALSO — CIMCOOL Tapping Compound — CIMCOOL Bactericide — CIMCOOL Machine Cleaner.

For full information on the complete family of CIMCOOL Cutting Fluids, call your CIMCOOL Distributor. Or contact Cincinnati Milling Products Division, Cincinnati 9, Ohio.

°Trade Marks Reg. U. S. Pat. Off.

COMING EXHIBITS

Western Metal Show—March 20-24, Pan Pacific Auditorium, Los Angeles, (American Society for Metals, Metals Park, Novelty, O.)

National Packaging Show — April 10-13, Lakefront Exposition Hall, Chicago. (American Management Assn., 1515 Broadway, Times Square, New York 36.)

Welding Show—April 17-21, New York Coliseum, New York. (The American Welding Society, 33 West 39th St., New York 18.)

Powder Metallurgy Show — April 24-26, Hotel Sheraton - Cleveland, Cleveland. (Metal Powder Industries Federation, 60 E. 42nd St., New York.)

Castings Show—May 8-12, Brooks Hall, San Francisco, Calif. (American Foundrymen's Society, Golf & Wolf Rds., Des Plaines, Ill.)

Design Engineering Show — May 22-25, Cobo Hall, Detroit. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

MEETINGS

MARCH

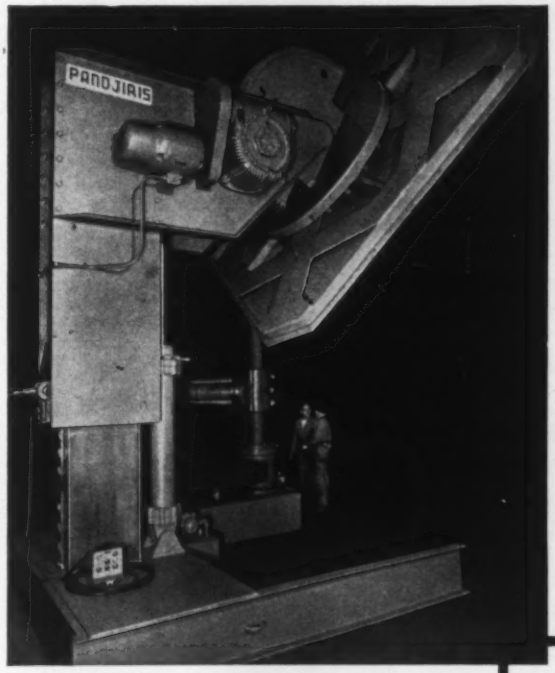
Society for Non-Destructive Testing —Western regional convention, Mar. 20-24, Ambassador Hotel, Los Angeles. Society headquarters, 1109 Hinman St., Evanston, Ill.

American Chemical Society—139th national meeting, March 21-30, St. Louis.

American Hot Dip Galvanizers Assn., Inc.—Annual meeting, Mar. 22-24, The Royal Orleans, New Orleans. Association headquarters, 5225 Manning Place, N. W., Washington, D. C.

Air Moving and Conditioning Assn., Inc.—Mid-year meeting, Mar. 22-24, Whittier Hotel, Detroit. Association headquarters, 2159 Guardian Bldg., Detroit.

(Continued on P. 26)



Put 20 tons where you want it

Position of the work is mighty important when welding. This 20-ton capacity positioner tilts, rotates and elevates automatically. Two standard Cone-Drive **double-enveloping** worm gear reducers provide the drive and tuck away compactly under the table.

Compact Cone-Drive gearing is available in gearsets, speed reducers and gearmotors.

CONE-DRIVE GEARS

DIVISION MICHIGAN TOOL CO.
7171 E. McNichols Rd., Detroit 12

Check these typical production savings enjoyed by alert manufacturers using

WYCKOFF LEADED STEELS

- Production economy without any sacrifice in quality
- Faster metal removal with fewer machining operations
- Turning, drilling, tapping, cut-off, reaming, threading, and other automatic operations are accomplished at much higher speeds and feeds
- Longer tool life, requiring fewer grinds thus reducing costly production line shutdowns

STEEL SERVICE CENTER INSTITUTE

Steel

All of these production advantages result in substantial savings in time and money when you specify and use Wyckoff Cold Finished Leaded Steels—the freest machining of all steels.

COLD FINISHED STEEL

CARBON ALLOY LEADED SPECIALS

WYCKOFF STEEL COMPANY

GENERAL OFFICES:
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WORKS:
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WYCKOFF STEEL PRODUCTS • Carbon, Alloy and Leaded Steels • Turned and Polished Shafting • Turned and Ground Shafting • Large Squares Wide Flats up to 12¾" x 2¼" and 14" x 1¼" • All types of Furnace Treated Steels including Carbon Corrected Steels

MEETINGS

(Continued from P. 25)

American Machine Tool Distributors Assn.—Spring meeting, Mar. 23-25, Hotel Mark Hopkins, San Francisco. Association headquarters, 1500 Massachusetts Ave., N. W., Washington, D. C.

American Management Assn.—Conference on Manufacturing, March 27-29, Drake Hotel, Chicago. Assn. headquarters, 1515 Broadway, Times Square, New York 26.

APRIL

The Metallurgical Society of AIME—National Openhearth Steel Conference, Apr. 10-12, Sheraton Hotel, Philadelphia. Society headquarters, 29 West 39th St., New York.

American Institute of Electrical Engineers — Biennial conferences on electric heating, Apr. 11-12, Sheraton-Lincoln Hotel, Indianapolis, Ind. Institute headquarters, 33 W. 39th St., New York.

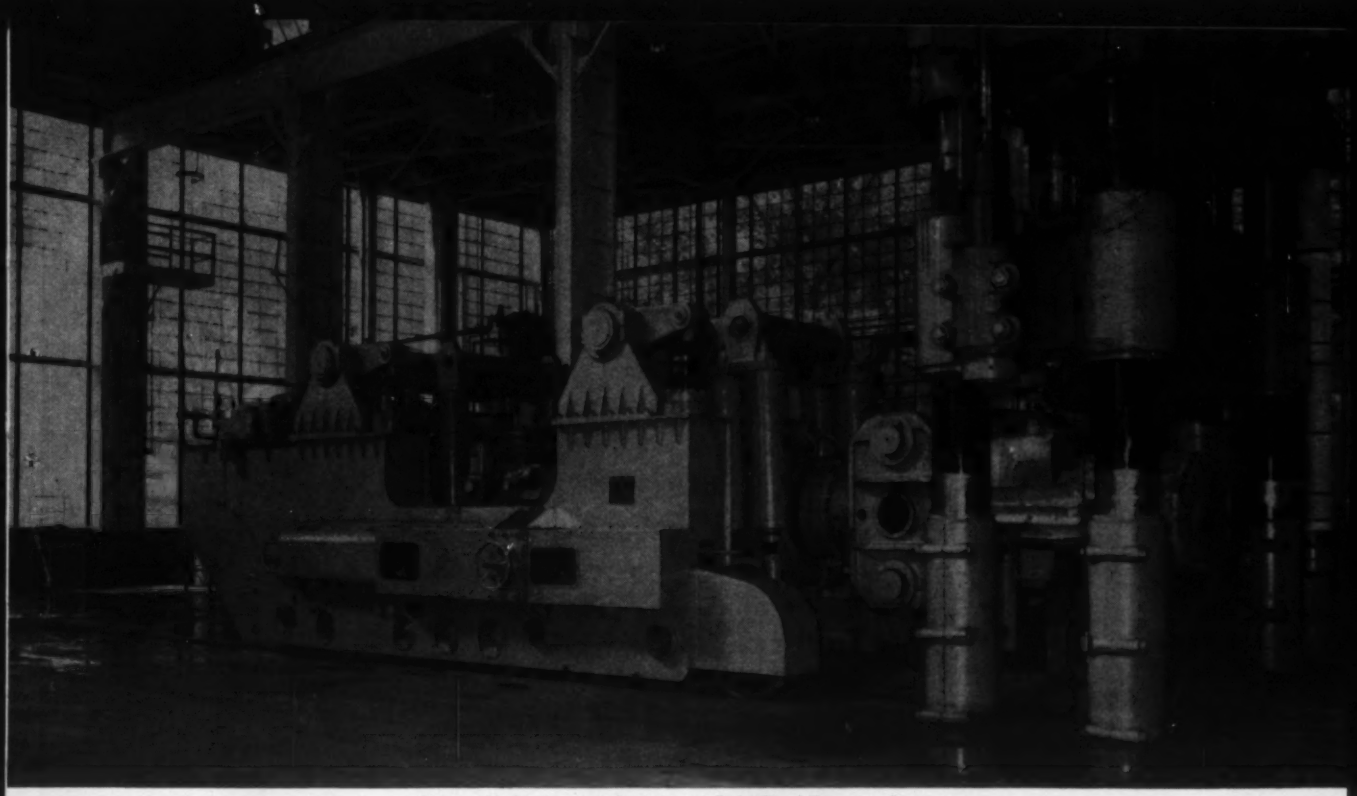
Steel Shipping Container Institute, Inc.—Annual meeting, Apr. 11-13, Kenilworth Hotel, Miami Beach, Fla. Institute headquarters, 600 Fifth Ave., New York.

American Society of Lubrication Engineers — Annual meeting and exhibit, Apr. 11 - 13, Bellevue-Stratford, Philadelphia. Society headquarters, 5 N. Wabash Ave., Chicago.

Copper & Brass Warehouse Assn., Inc.—Annual meeting, Apr. 11-14, Colorado Springs, Colo. Association headquarters, 1900 Arch St., Philadelphia.

Rail Steel Bar Assn. — Annual meeting, Apr. 17-18, Biltmore Hotel, New York. Association headquarters, 38 S. Dearborn St., Chicago.

American Welding Society—Annual meeting, Apr. 17-21, Commodore Hotel, New York. Society headquarters, 33 W. 39th St., New York 18, N. Y.

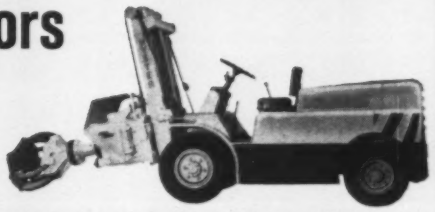


Hydraulik forging manipulator at Ohio Steel Foundry Company

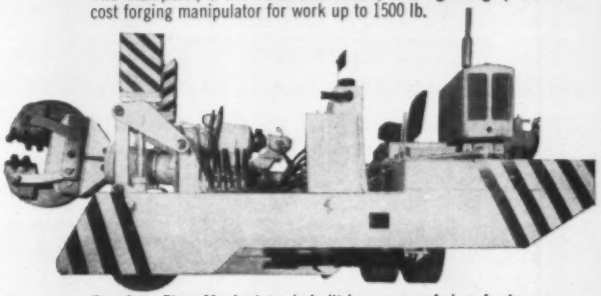
New heavy-duty addition to the Salem-Brosius Family of forging manipulators

Salem-Brosius, long well known for its Auto-Floor Forging Manipulators and manipulating attachments for fork lift trucks, now offers the forging industry the HYDRAULIK line of manipulators.

These machines feature fireproof water hydraulic systems, and are built in a range of capacities from 20,000 to 200,000 lb. Their rugged design and construction assure satisfaction under the most rigorous forging conditions. Outboard control pulpit assures that the operator has full work visibility at all times. High speed and precision of machine motions assure high production rates and work quality within the most rigid forging tolerances. Write today for further information.



The Manipulet, a lift truck attachment, is a lightweight, low cost forging manipulator for work up to 1500 lb.



The Auto-Floor Manipulator is built in a range of sizes for handling work during forging in weights from 2000 to 20,000 lb.

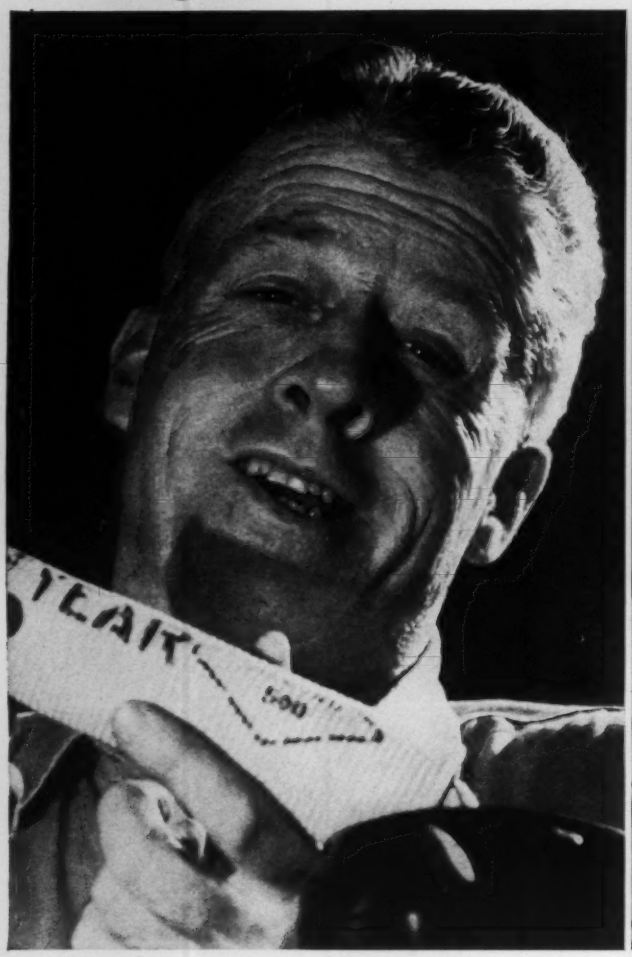
Salem-Brosius, Inc.

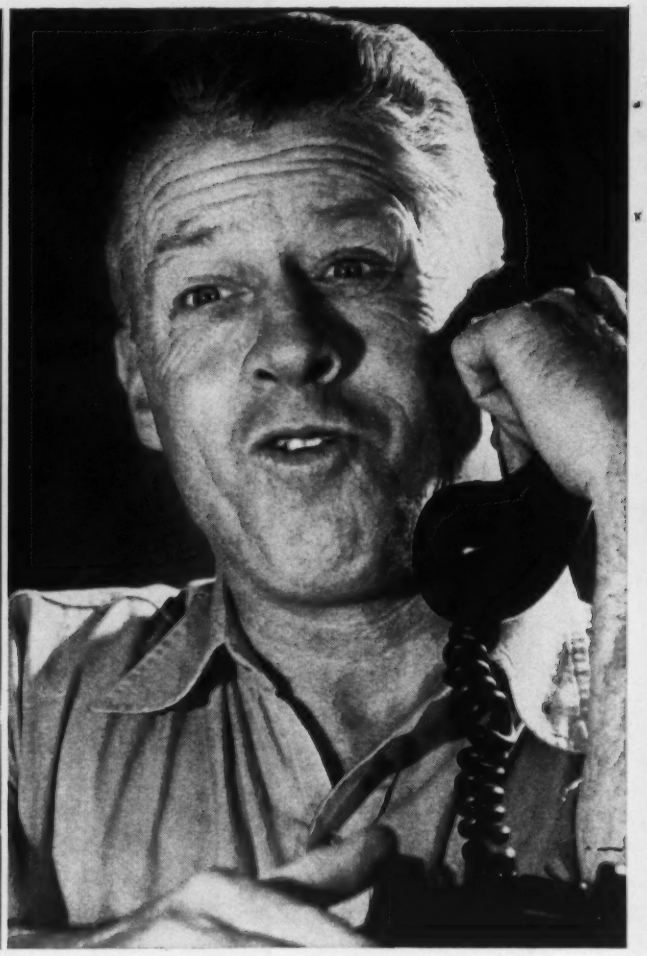
PITTSBURGH, PENNSYLVANIA

Salem-Brosius (Canada) Limited, Rexdale, Ontario • Salem-Brosius (England) Limited, London and Milford, England
Salem-Brosius (France) S.A., Paris, France • Salem-Brosius (Luxembourg) S.A. • Alloy Manufacturing Corp., Pittsburgh, Pa. • R. H. Freitag Manufacturing Div., Akron, Ohio • General Ionics Corp., Pittsburgh, Pa.

GOODYEAR

Why not buy hose





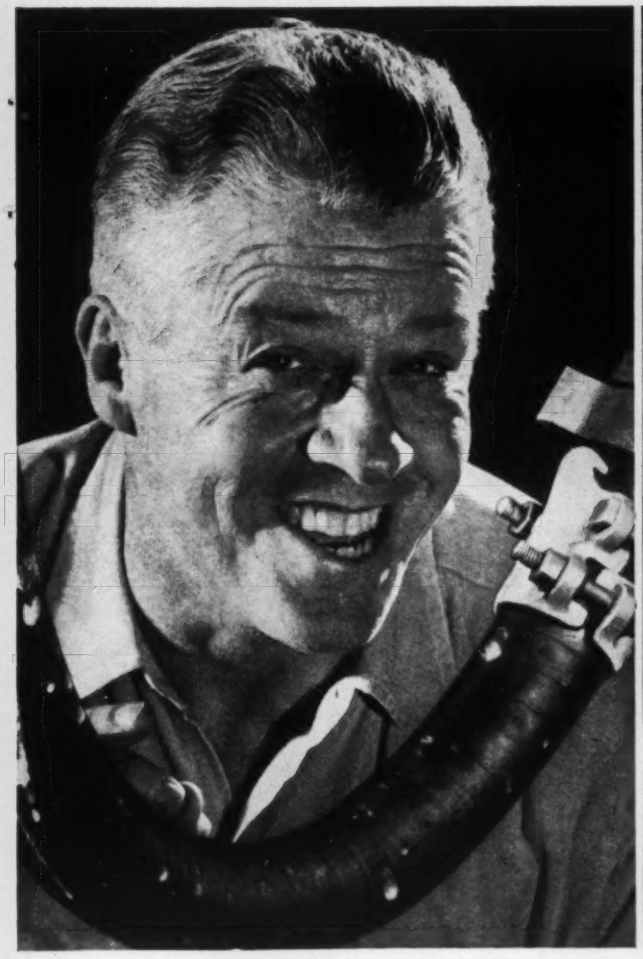
YOU GET THE RIGHT HOSE
(With the world's largest, most diversified line of industrial hose to choose from, *it's easy with Goodyear!)*

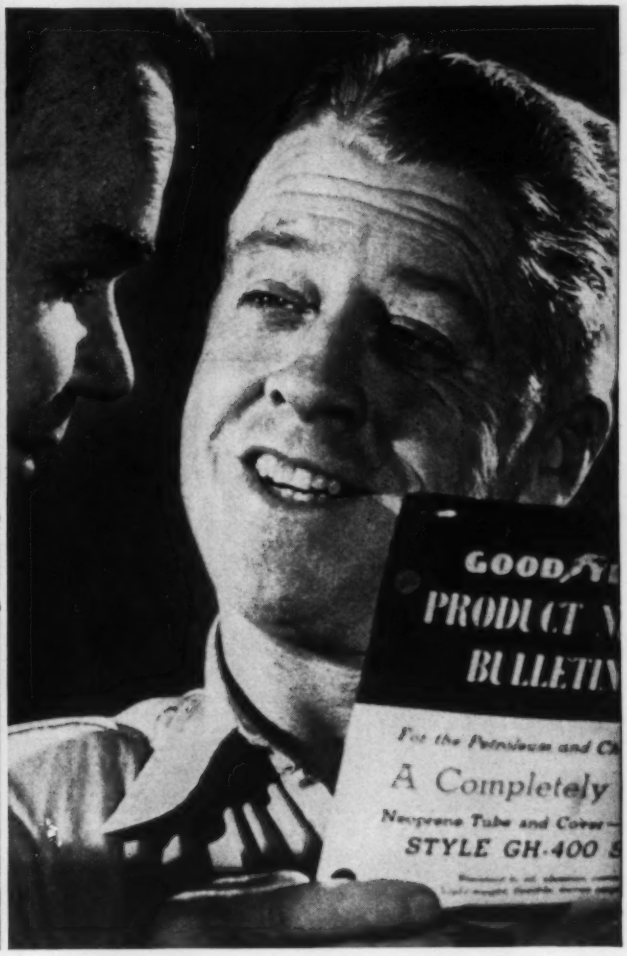
YOU GET FAST DELIVERIES
(With a big, nationwide network of stocking distributors to serve your needs, *it's easy with Goodyear!)*

For the right hose... at the right place... at your Goodyear Distributor... first in service

Lots of good things come from **GOOD**

the easy, Goodyear way?





YOU GET UNMATCHED QUALITY
(With more than 50 years of pioneering research and development backing hose quality, *it's easy with Goodyear!)*

YOU GET EXPERT ADVICE
(With a trained hose expert like the G.T.M. – Goodyear Technical Man – always on call, *it's easy with Goodyear!)*

the right time... at the right price... call with all industrial rubber products

Or write Goodyear, Industrial Products Division, Akron 16, Ohio

GOODYEAR INDUSTRIAL PRODUCTS

The American Hot Dip Galvanizers Association with the cooperation of The American Zinc Institute Announces the $10,000.

Galvanizers' International

Ten Awards of $1,000. Each

Ten awards are to be made to entrants selected by the judges. Each award will consist of $1,000 in cash, a suitable medal and a Certificate of Achievement.

This is not a contest—it is a search for new ideas. ■ *Your entry, therefore,* will not be judged against others, but solely on its merit and value in developing new applications and markets for Hot Dip Galvanizing. ■ If your idea, in the opinion of the judges, is of practical value to the industry, you will be cited for an award—promptly. ■ Because the Hot Dip Galvanizing Industry is anxious to receive ideas of this type, the judges reserve the right to present *more* than 10 awards, if the entries warrant.

CONDITIONS ■ Anyone in the world (except members of the American Hot Dip Galvanizers Association and the American Zinc Institute, and their employees and advertising agencies) may submit one or more entries. ■ Entries will be considered by the judges promptly upon their receipt. No entry received after April 30, 1962 will be considered. ■ The Awards will be made for ideas pertaining to: (a) Applications of Hot Dip Galvanizing to a *new or unusual* field, or; (b) An *improvement* in application in fields where Hot Dip Galvanizing is now being used, or; (c) New methods of *after-treatments* of Hot Dip Galvanized products. ■ Each entry submitted must contain: (a) Description and documentation of application. (b) Case history of the application or process accompanied by photo, drawings, formulae, etc. (c) All technical data needed for the utilization of the idea submitted. (d) Release of the application or idea for general use without payment or royalty other than the $1000 award. ■ The decision of the judges will be final. Award-winning ideas will be retained by the American Hot Dip Galvanizers Association for dissemination throughout industry. Other entries will be returned. ■ No formal entry blank is required but the entry should be accompanied by the name, address and business connection of the individual submitting it. Business firms or corporations may submit entries under their business name, instead of as individuals, if they choose to do so. ■ Entries should be sent to: AMERICAN HOT DIP GALVANIZERS ASSOCIATION, INC., 5225 Manning Place, N.W., Washington 16, D. C. ■ *Note:* For information on galvanizing write to the above address for name and location of the American Hot Dip Galvanizers Association member nearest you.

Awards

FOR ACHIEVEMENTS IN RESEARCH, DEVELOPMENT AND UTILIZATION OF GALVANIZED PRODUCTS

THE JUDGES ■ Dr. Clarence H. Lorig, Technical Director, Battelle Memorial Institute and Past President American Society for Metals. ■ Mr. John R. Daesen, Technical Director, American Hot Dip Galvanizers Association. ■ Mr. John L. Kimberley, Executive Vice President, American Zinc Institute.

STORKLINE CRADLES YOUNG AMERICA WITH REPUBLIC WIRE

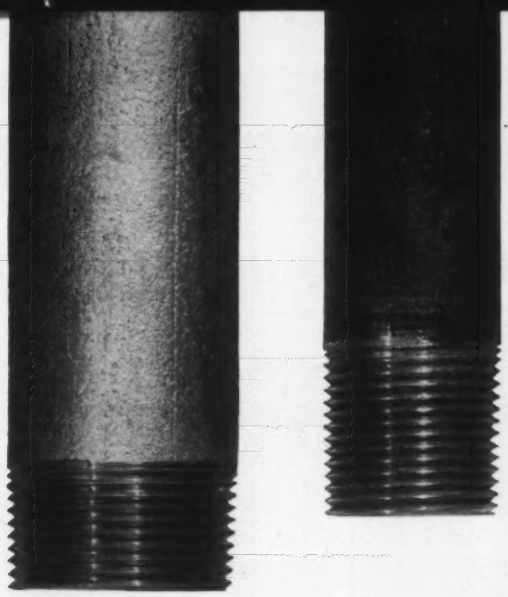
Durability and comfort are extra important in baby cribs and youth beds. Durability because Junior loves to bounce and play. Comfort to insure healthful, relaxed sleep. Storkline Furniture Corporation, Chicago, gives careful consideration to these factors.

Fourteen gage Republic Link Wire, produced to the exacting Storkline standard of quality, is formed into the link fabric which is so important in building Storkline furniture.

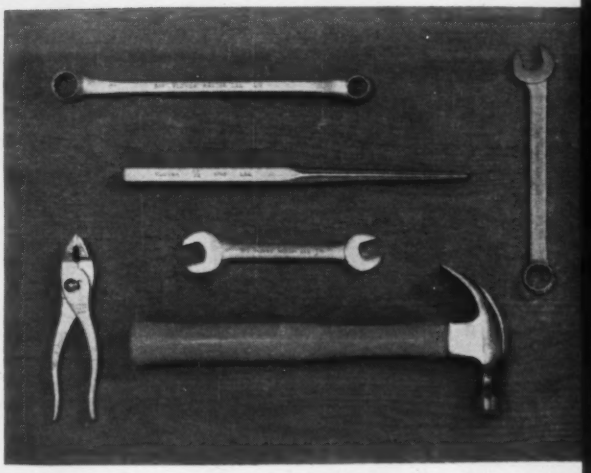
WHATEVER YOUR PRODUCT, your quality, cost, and production requirements are carefully studied by Republic Metallurgists before they recommend a wire specification. These men know how important wire physicals, finish, cast, and size accuracy are to your finished product quality. They're at your service, at no obligation, where and when you need them.

For specific data on Republic Wire Products (including a full range of manufacturer's coarse, spring, screw, rivet, and heading wires), and information on Republic Wire Metallurgical Service, send the coupon.

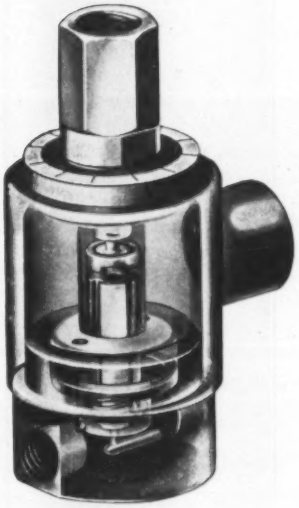
This STEELMARK of the American Steel Industry tells your customers a product has the comfort and long life of Steel Spring Wire. Use it on the products you sell.



LONG-LIFE, low-cost Republic Steel Pipe, choice of operations and maintenance men to handle dozens of tough industrial jobs. Constant quality control at Republic results in pipe of outstanding uniformity in quality, size, and weld-strength. Tight, galvanized coating stubbornly resists corrosion and fabrication damage. Your local Republic Dealer can supply clean, rust-free Republic Pipe in the sizes you need. Write for data.



REJECT RATE AT AN ALL-TIME LOW, customer satisfaction high, reports Vlchek Tool Company, Cleveland. A high volume manufacturer of quality mechanics' tools, Vlchek forges hammers, wrenches, punches, pliers, and other tools from three top grades of Republic Hot Rolled Carbon Steel. As the nation's largest supplier of forging quality steels, Republic offers a complete range of sizes, shapes and types. Send the coupon for information.



MACHINABILITY AND CERTAIN MAGNETIC PROPERTIES are key reasons for Skinner Electric Valve Division, Skinner Precision Industries, Inc., selecting Republic Cold Finished Stainless Steels. Republic Type 303 non-magnetic stainless is used in part of the sleeve assembly, metering pins, and body orifices of solenoid valves. Type 430-F provides the excellent machinability, magnetic properties, and wear resistance for precision internal valve parts and valve bodies. Return the coupon for data on the more than 40 standard types of Republic Stainless Steel.

REPUBLIC STEEL

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World's Widest Range of Standard Steels and Steel Products

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Send more information on:

☐ Wire ☐ Stainless Steel
☐ Steel Pipe ☐ Hot Rolled Carbon Steel

Name_____ Title_____

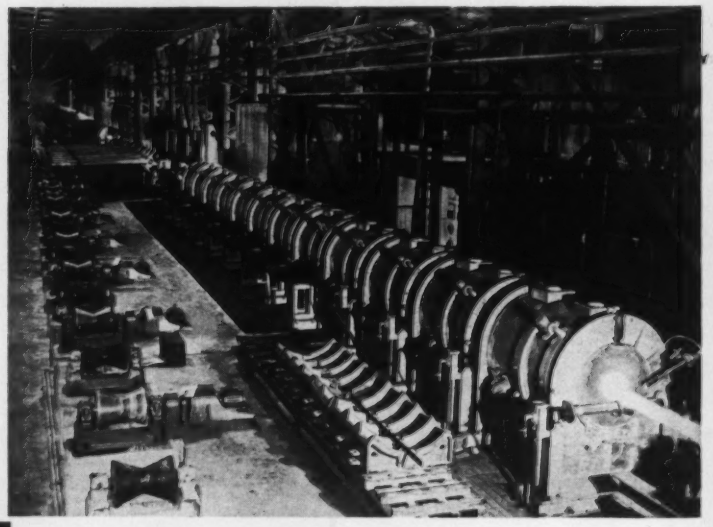
Firm_____

Address_____

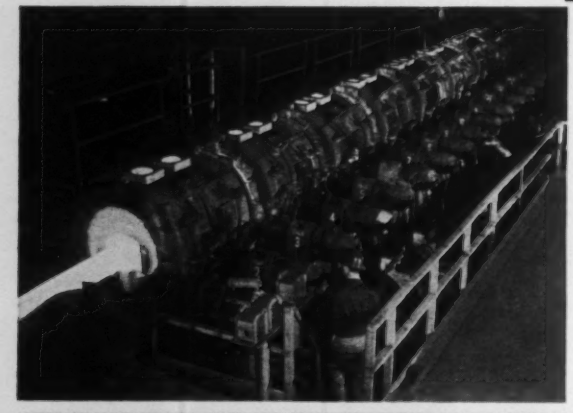
City_____ Zone____ State_____

NEW SLANTS ON HEAT PROCESSING FROM SELAS

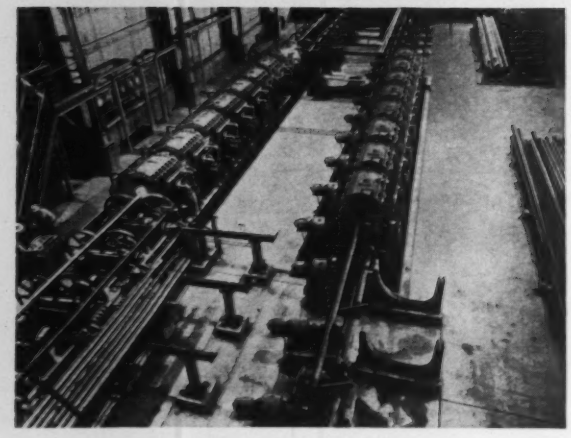
Here's how the Steel Industry relies



TUBING... *is normalized and, if required, stretch-reduced in this Selas barrel-furnace line. After forming and welding, the tubing is conveyed through a 48-barrel normalizing line with exit temperature approximately 1650° F. Stretch-mill product proceeds through 12 additional* GRADIATION® *furnaces which heat tubing to 1800°-1850° F. Entire process is automated, with line speeds matching mill speeds.*



BLOOM REHEATING *"on the fly," at rates of 198 tons per hour is accomplished in this continuous Selas barrel-furnace line. Reheating time of* only 3 minutes *reduces scale, amounting to a saving of 3 tons of steel per hour. Automated handling saved enough to pay for equipment in first 1½ months! Occupying floor area only 63' x 11', this continuous furnace assures uniform rolling temperature within each bloom and from piece to piece.*



SHORT-CYCLE HEATING *of seamless tubing for oil-country application is a typical cost-saving operation for Selas barrel-furnace lines. This overall view shows hardening (left) and tempering (right) lines, with automatic transfer between these treatments. Eight barrels per line. Advantages include: uniform properties throughout, little or no scale, reduced floor space requirements, and high degree of controllability.*

on Selas barrel-line furnaces

The installations on these pages graphically demonstrate how the steel industry relies on Selas barrel-furnaces to

- cut operating costs
- increase production rates
- reduce handling and labor requirements
- save valuable floor space
- improve product quality

Specifically designed and custom-built to meet individual production requirements and job specifications, Selas barrel-line furnaces employ time-proven standardized engineering features for long-time operating dependability and minimum initial investment. Acceptance? 446 Selas barrel-furnaces are at work in 49 separate heat treating lines for a variety of continuous applications including annealing stainless bars and tubing, heating billets for piercing, reheating pierced tubes for sizing, hardening and tempering oil country alloy and carbon tubing, etc.

At your convenience . . . without cost or obligation to you . . . a Selas field engineer would welcome the opportunity to survey your needs. For this personal service contact our Steel Mill Division Office, 300 Mt. Lebanon Blvd., Pittsburgh 34, or our Furnace Division, Dresher.

SELAS CORPORATION OF AMERICA

13 Dreshertown Road, Dresher, Pa.

EUROPEAN SUBSIDIARY: Selas Corporation of America. European Div., S.A., Pregny, Geneva, Switzerland. INTERNATIONAL AFFILIATES: FRANCE—Societe Exploitation de Produits Industriels, Paris; JAPAN—International Machine Co., Ltd., Tokyo.

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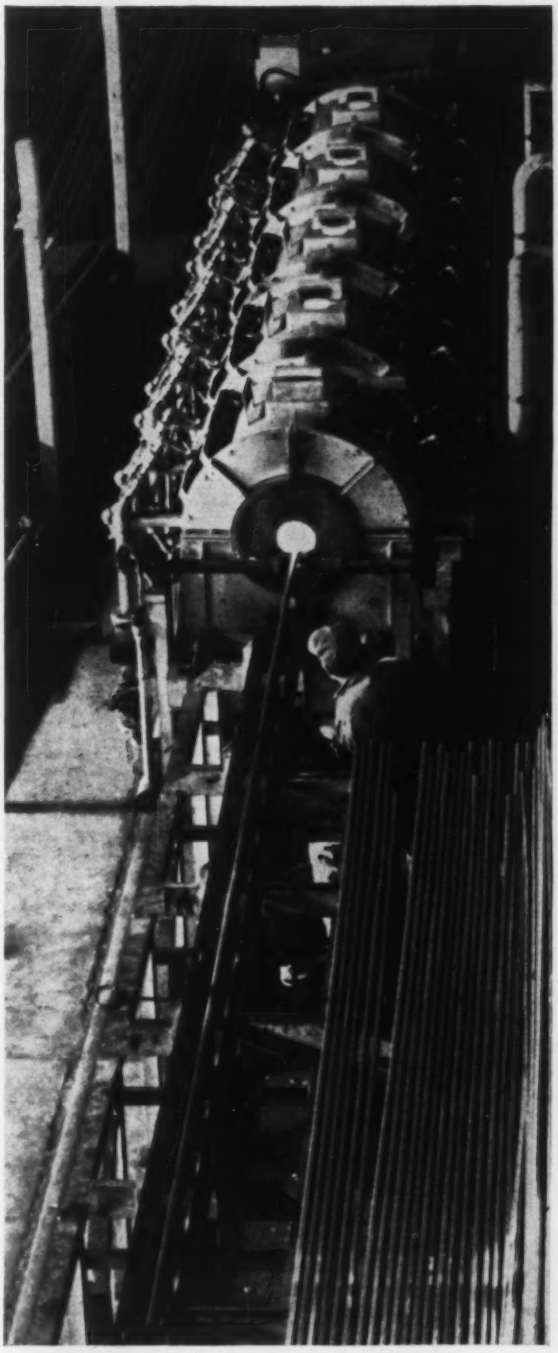
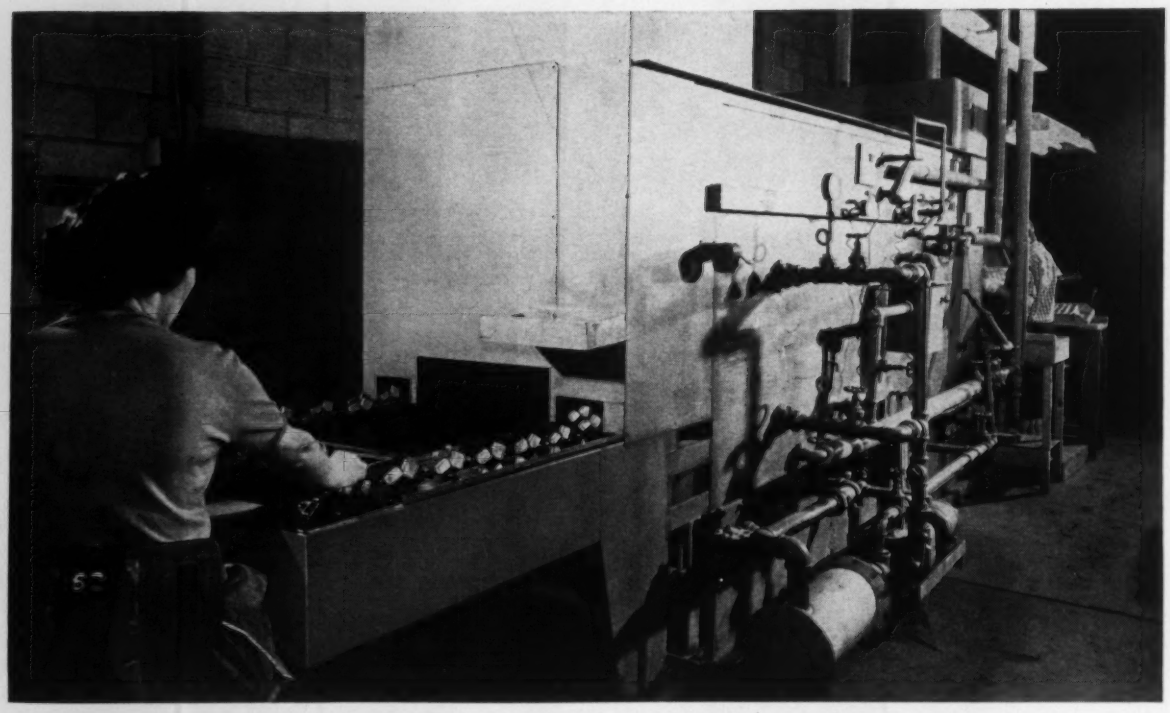
SELAS

HEAT AND FLUID PROCESSING ENGINEERS

DEVELOPMENT / DESIGN / CONSTRUCTION



STAINLESS STEEL *bars up to 5¼" cross-section and lengths to 30' are continuously annealed, and other grades normalized in this compact line of barrel-type furnaces.* DURADIANT® *burners heat uniformly at high thermal gradient without flame impingement on the work, resulting in minimum oxide formation. Annular ring water-spray quench cools work quickly and uniformly for maximum straightness in the annealed product.*



HOW ZIPPO DEGREASES 100,000 PARTS BEFORE CLEANOUT

Zippo Manufacturing Company, Bradford, Pa., is meticulous about degreasing parts and cases used in their lighters. The company does as careful a cleaning job as watchmakers or manufacturers of aircraft instruments.

With all their attention to detail, they still manage to degrease 100,000 parts before cleanout with Nialk® TRICHLORETHYLENE. The special stabilizer contains *psp*—permanent staying power. This permits them to process a large volume of parts without endangering their quality. *Psp* maintains the stabilizer at maximum efficiency between cleanouts.

The stabilizer also prevents gummy substances from forming, substances which might coat the heating elements in the degreaser units and reduce efficiency of the operation. The vapor and bath stay clean. Parts never become tarnished.

When baths are cleaned out, Zippo gets full recovery of the solvent, and it is fully stabilized so they never have the cost and trouble of adding fresh stabilizer to maintain bath strength.

Zippo likes the several different degreasing jobs that Nialk TRICHLOR does. As many as five different metals might be degreased in a day—brass, stainless steel, die-cast zinc, copper and gold.

Even considering all the use Zippo gets from each bath, they have never had to sacrifice quality. There has never been a need to titrate or run any other type of test.

Nialk TRICHLOR can bring you the same benefits and cost savings. Hooker technical experts can help you to set up your degreasing operations, then check regularly to make sure your operation remains trouble-free. Zippo obtains Nialk TRICHLOR through Ken C. Merrill Co.

See *your* Hooker Chemical distributor. He will be glad to help you with your problems and questions. Or write us direct. Our years of experience are yours for the asking.

HOOKER CHEMICAL CORPORATION

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STEELMAKING AT JESSOP

Listen...

5...4...3...2...1...0...Lift Off!

The countdown is on.

Scientists and skilled technicians scan their instruments, alert to the least sign of malfunction.

Liquid oxygen has been piped into the fuel chamber of the gleaming Atlas ICBM poised on the launching pad. Other last-minute preparations are completed.

Tension mounts. It won't be long. Listen . . .

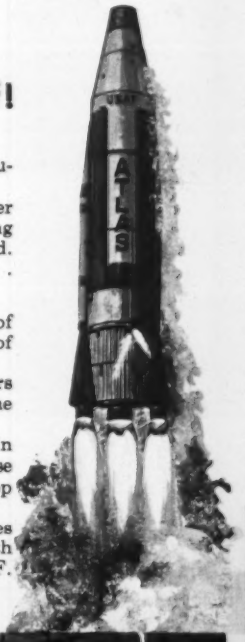
5...4...3...2...1...0...*Lift Off!*

The missile comes to life in a swirling cloud of vapor, exhaust and flame. The engine—capable of 360,000 pounds of thrust—roars thunderously.

Airborne now, the Atlas gathers speed and soars majestically on its predetermined course down the Atlantic range—a successful launching.

Jessop Steel Company makes several alloys used in the Atlas—steels forged and machined into precise but rugged mechanisms. And you will find Jessop steel in the launching pad "plumbing" too.

Swepco Tube Corporation of Clifton, N. J., makes piping for LOX systems that fuel the Atlas with liquid oxygen at temperatures of –300° F. to –320° F. *That's* punishment for any metal.



But Swepco's austenitic chromium nickel Rock-Forged pipe can take it. Ductility—to avoid fracture by reason of brittleness—is an all-important factor in this application.

With a value of about 38 foot pounds by Charpy Impact Test, the piping supplied by Swepco handles the job with ease—with an added measure of safety against costly breakdown.

Swepco buys steel from Jessop for rock-forging. Why? Because through controlled chemistry and certain production techniques, Jessop and Swepco developed a steel second to none in workability in the cold forging process.

In making steel like this, experience counts . . . and Jessop has it. Call any of Jessop's 23 sales offices in North America and let us prove it to you.

Plants and Service Centers:
Washington, Pa. • Los Angeles • Chicago • Detroit • Owensboro, Ky. • Wallaceburg, Ont.

JESSOP

KEMP LEAD MELTING POTS *give you 5 exclusive advantages!*

Where speed plus top control counts, you can count on Kemp Immersion Heaters to give you accurate heat control in annealing, tempering, lead and tin melting and many other applications. Here's why:

1 Only Kemp Immersion Heaters are equipped with the exclusive Kemp Carburetor that pre-mixes air and gases. This means lower labor costs . . . more complete control . . . much faster starting.

2 Only Kemp puts the heat where it belongs—next to the material to be melted. Only Kemp uses recirculation heat tubes to transfer heat from the gases to the melt. Overruns and lags are virtually eliminated.

3 Only Kemp eliminates exposed flames, hazards to workers, equipment and plant. Burner is enclosed in heating tube.

4 Only Kemp assures you of no cracked pots at any time. Kemp pots are designed with a safety factor above the level of controlled heat.

5 Only Kemp gives you accurate temperature control at all times. Set the Kemp unit and forget about it. Kemp's exclusive heater design assures your melt will always, automatically, be uniform.

See the man from Kemp if you're in need of reliable immersion heater equipment. Write today for Bulletin IE-11 or call your local Kemp representative.

It always pays to come to

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OF BALTIMORE

THE C. M. KEMP MANUFACTURING COMPANY
405 E. Oliver St., Baltimore 2, Md.

HOW TO HOLD A CUP OF HELLFIRE

Gently, friend. We're pouring a cup of molten iron from a man-made volcano. No slips twixt cup and lip, please. And now the pouring ladle must be moved to the mold and its contents emptied. A touchy problem in material handling? Yes, a delicate problem. Yet this is the daily activity of foundries and mills throughout America—the daily work of Whiting cranes and materials handling systems.

If you have to move materials—in shop or mill, dock or warehouse—move it at low cost, dependably and safely, call on Whiting. There are specialists here who can talk your language.

The facts on "How to Select an Overhead Traveling Crane" are yours for the asking. Ask for Bulletin 79. Write *Whiting Corporation, 15601 Lathrop Ave., Harvey, Illinois.* In Canada: *Whiting Corporation (Canada) Ltd., 350 Alexander Street, Welland, Ontario, Canada.*

See our catalog in Sweets

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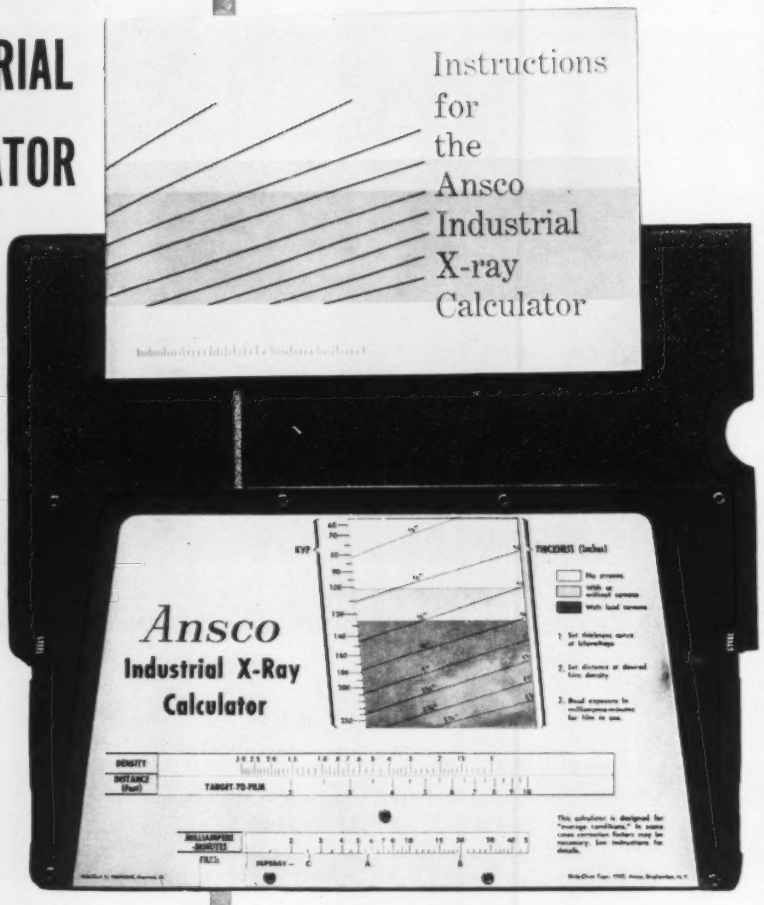
CRANES

WHITING

MANUFACTURERS OF CRANES; TRAMBEAM® HANDLING SYSTEMS; PRESSUREGRIP; TRACKMOBILES®; FOUNDRY, RAILROAD, AND SWENSON CHEMICAL PROCESSING EQUIPMENT

NEW ANSCO INDUSTRIAL X-RAY CALCULATOR SOLVES TECHNIQUE PROBLEMS AT A GLANCE



Here's an all new calculator designed to correlate all factors in industrial x-ray technique and give working answers as fast as you can move the slides.

- **PROVIDES COMPLETE INFORMATION**
- **READS ALL ON ONE SIDE**
- **READS FROM TOP TO BOTTOM**

Solves problems in:

a. exposure determination.
b. film speed-density relationships.
c. exposure compensation for density changes.
d. choice of film to meet scheduling problems.
e. techniques for multi-thickness specimens.
f. exposure compensation for kilovoltage changes.
g. sandwich techniques.
h. density determinations for various metal thicknesses.

In the shop this new calculator rapidly provides information for solving new problems.

In the classroom it gives students a visual working relationship with x-ray exposure parameters.

Ansco, Binghamton, N. Y., A Division of General Aniline & Film Corporation.

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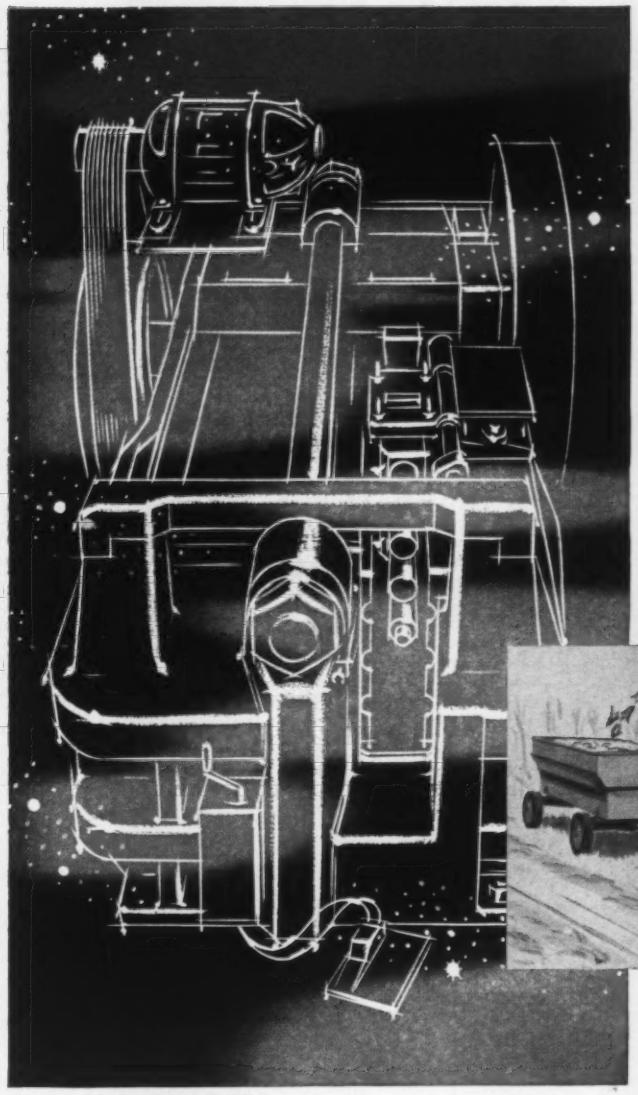
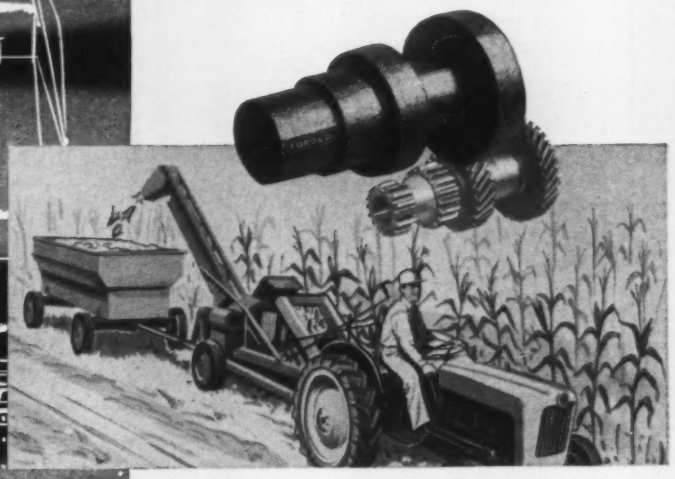


RESISTANCE TO PUNISHMENT of any severe-service part increased by designing it to be forged



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Gear blanks for tractor and farm implement transmissions are designed to be upset-forged, usually with integral forged stub shafts. Forging gives these vital parts maximum resistance to gear-clashing shifts. Transmission life can be equal to equipment life when gears are FORGED.

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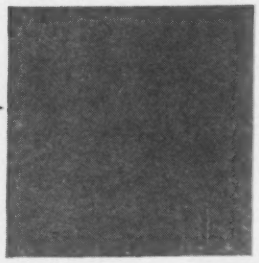
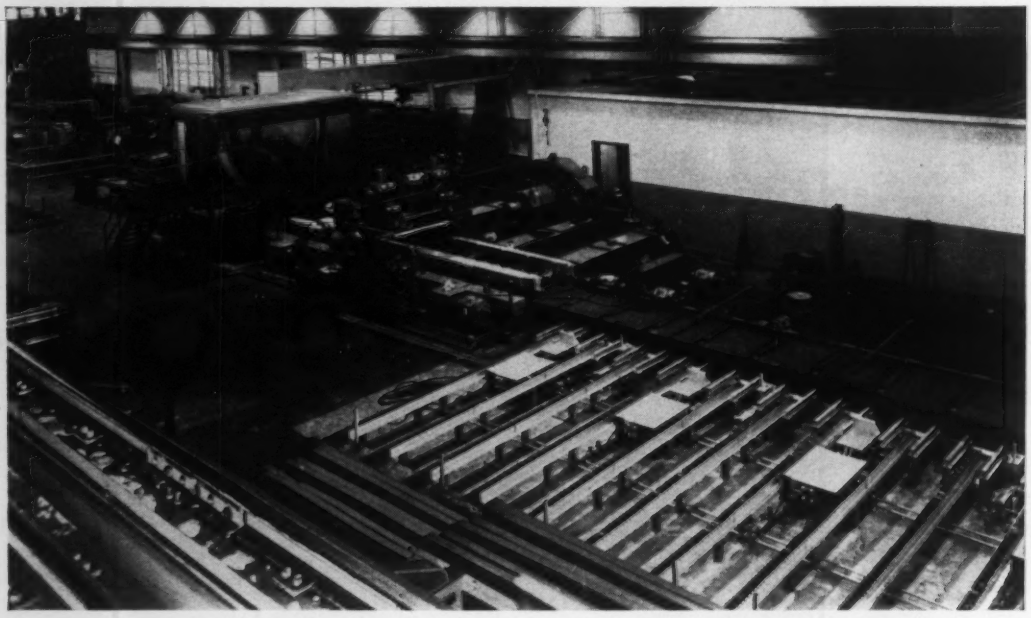


and flats this thin

on **BIRDSBORO** 18″ two-high Reversing Hot Mill



Birdsboro 18″ reversing hot mill at the Hawthorne Works of Western Electric Co., Inc., Cicero, Ill.

• This Birdsboro mill rolls 1½″ and 2½″ square billets . . . various flats (including one 7″ wide by .375″ thick) . . . from ferrous alloys containing nickel, cobalt and vanadium!

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ROAD BUILDERS like Pres. Kennedy's highway financing program. Authorization, originally scheduled to end in 1969, is now extended through 1971. Also, the American Road Builders Assn. is pushing to simplify and standardize highway materials.

THE COPPER INDUSTRY fights for new markets by joining with other materials. Two new uses: A tin-lined copper tube for carrying corrosive gases. It is installed by pulling through old lines. Also, a pre-insulated pipe, made by extruding foam plastic around copper tubing. Lower material cost and less installation labor cost is claimed

A FOREIGN MARKET worth a hard look by consumer durable goods makers is Malaya, according to the Commerce Department. This nation has the highest per capita income of any Asian country. Interest there is growing in Western-type goods. In 1959, U. S. share of the $579 million imports was 3 pct; in 1960, 6 pct.

CAPITAL SPENDING by the chemical industry will hit $3.5 billion for 1960-61. This is 12 pct higher than the industry capital spending projection made in 1959, and the second highest ever reported by the Manufacturing Chemists' Assn. The new estimate is based on a survey made of 348 companies. Organic chemical producers lead in capital spending. They will account for $1.3 billion of the total.

LEAD, ZINC AND ALUMINUM all face the same major problem, overcapacity This is the analysis of Value Line Investment Survey. The survey says the pressure on prices is not likely to subside "until U. S. and Canadian consumption picks up later this year."

HOME CRAFTSMAN TOOL catalogs are finding their way into more and more offices of purchasing agents. Employees of companies are reportedly turning more to their purchasing departments for assistance with tool purchases.

RETAIL SALES spurted in the first week in March with better weather and Easter promotions. For appliances: "moderate increases."

NEW BUSINESS incorporations in February fell to the lowest level for any February since 1958. The total came to 12,734, a drop of 22.1 pct from 14,669 of February 1960.

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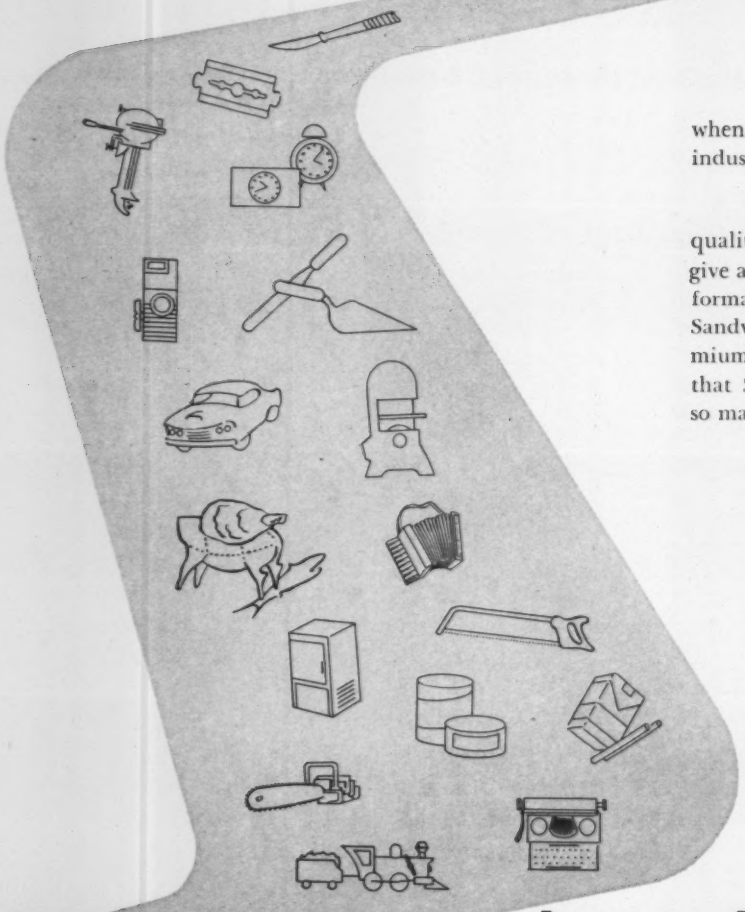

As a matter of fact, *even before* 1919 when Sandvik was incorporated, American industry used Sandvik products.

The reason, then and now, is Sandvik quality—the ability of Sandvik products to give a consistent, predictable, premium performance. It is by this performance that Sandvik has earned its reputation for premium products. It is by this performance that Sandvik contributes to the success of so many American products.

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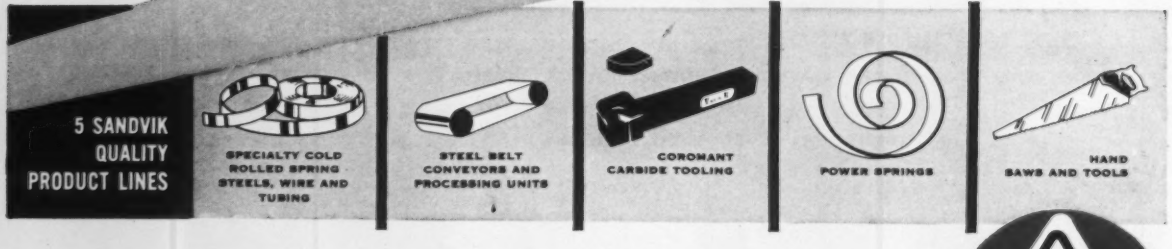
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ACCURATE CASTING: A hydraulically operated pouring unit is used at American Steel Foundries.

Steel Founders Remain Cautious, But Business Is on the Mend

The evidence isn't overwhelming that the steel castings market is improving.

But some founders are convinced that there is business to be had if it's sought aggressively.

By K. W. Bennett

■ Is the steel castings outlook just a shade better?

Foundrymen are generally conservative. In a sample of opinion on the 1961 sales outlook conducted by the Steel Founders' Society of America last week, a three way split developed. One-third of foundry officials contacted expect business to drop. One-third see a gain. One-third see no change.

Even those who expect 1961 to show improvement, qualify it by saying the upturn won't be apparent until latter third quarter. And they say it won't really swing sharply upward until the fourth quarter.

On the Mend—But there are hints that things could improve at a faster rate. American Steel Foundries, one of the largest makers of steel castings, indicates that its fiscal year ending September 30, will be no better than 1960.

Improvement will come in the fourth calendar quarter, according to Vice President C. E. Grigsby. He does expect some improvement in June. But despite its conservative forecast, this producer scored a $1.5 million gain in backlog in the first week in March.

Birdsboro Corp., strongly concentrated in cast parts for steel mill equipment, predicts only slight gains in 1961. But a company spokesman says that February

bookings gained 300 pct over the January period. This foundry sold $12 million of product in 1959, bucked the recession to record $19 million in sales during 1960.

Sell New Markets—At the same time, an industry marketing man, while still not convinced that 1961 will be a better year, admits that one of the long lead time indicators began to recover in January. This would suggest gains by mid-second quarter.

It's already apparent that some steel foundrymen believe they can counter adverse business conditions. Some of them succeeded in doing just that in 1960.

Formula for ground gaining rests largely on new markets. A number of steel founders have entered the missile, aircraft, and ground support equipment fields for the first time in the past two years. At the same time they've returned to cast armor production for Army Ordinance. Significantly, the group that expects gains in 1961 is, almost without exception, marketing a part of its product in the defense market.

Strong and Weak—Other markets that look strong for new business in 1961: Heavy construction equipment; automotive equipment, particularly heavy trucks; farm equipment; pulp and paper mill machinery; food machinery.

The railroad equipment market is not regarded as any stronger than in 1960. But special rail-car equipment, particularly cars for piggybacking, have already netted some new 1961 business. New products aimed at the railroad market have also coaxed in some dollars.

Mining equipment, logging equipment, oil and gas field equipment, and standard railway items are regarded as markets that will show very little improvement during the 1961 selling year. A number of foundrymen expect to see them actually drop below 1960 levels.

How to Do It—How do you boost business levels when the outlook is shaky?

Among the techniques that are paying off are a switch in market emphasis, expansion of the selling force through greater use of manufacturing representatives, and boosts in engineering and development.

F. R. Brown, vice president—marketing, Unitcast Corp., expects his company to boost output by 25 pct in 1961. Unitcast hit marketing hard in 1959 and 1960. The result is that it moves into 1961 with the biggest customer list in the company's history.

The company has boosted its test facilities to go after difficult defense jobs. And it is bringing in new product lines aimed at the railroad, mining, and construction machinery markets. With its expanded customer list, Mr. Brown told The IRON AGE, the company has managed to hold the backlog gains it scored earlier this year.

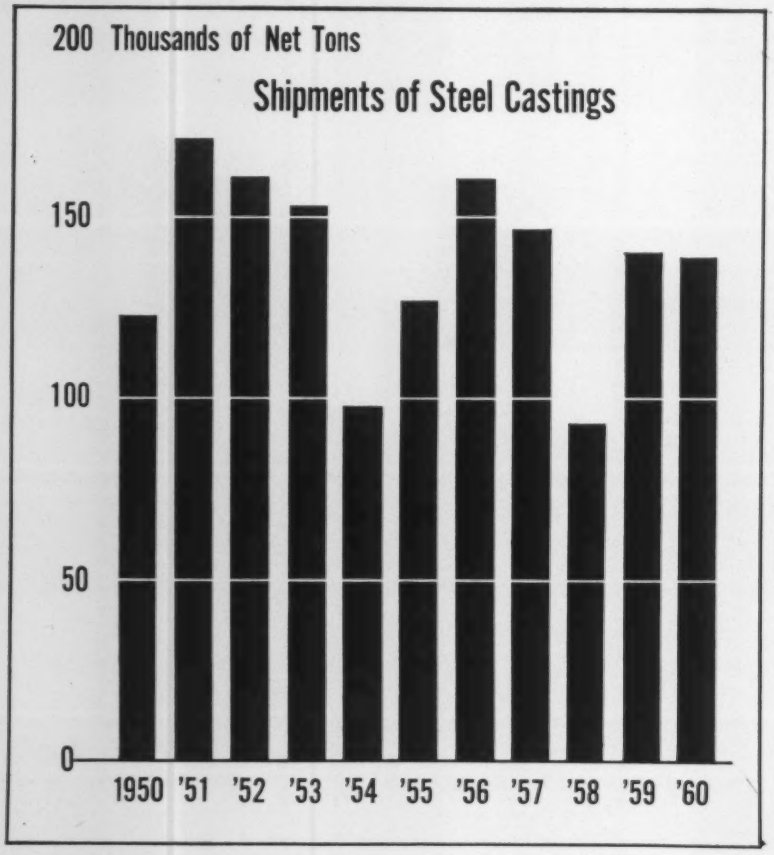
Speeding Service—Superior Steel and Malleable Castings Co. president R. L. Gilmore says his company will boost market emphasis on truck components. It has budgeted for 18 pct of total sales in the automotive market this year, against 13 pct in 1960.

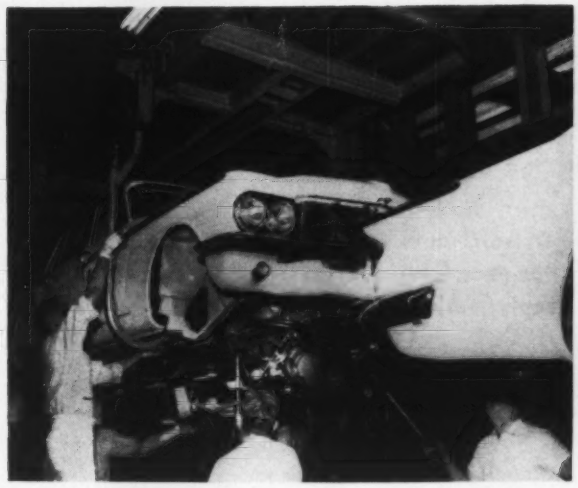
To move quickly on bids and designs, Superior's engineering department is installing a high speed computer this week. An earlier entry into the building products field with a new product is already paying off in sales into a market the company hadn't touched in the past.

Despite the conservative tone of most outlook statements, steel founders can point to some surprising showings for an industry that is traditionally tied to railroad buying.

Castings sales gained 10 pct in December, and preliminary figures hint at gains of as much as 20-25 pct in January.

For 1961: A Modest Upturn?





UP FROM BELOW: Engine is "added" from below to the Dodge Lancer which is built on unit-body concept.

DOWN FROM ABOVE: Standard-size Ford body is "dropped" over frame with engine and drive train.

Body Battle Flares in Detroit

Engineers Debate Separate Frames or Unitized Bodies

The debate over using separate auto frames or unitized bodies arose again in Detroit last week.

Engineers can't agree on eventual outcome.

By A. E. Fleming

■ Many automotive engineers agree there's a place for both separate frame and unitized body designs. But they don't agree on when to use one or the other.

The debate arose again last week in Detroit at the Society of Automotive Engineers' National Automobile Week. Opinions varied and, as usual, the issue remained unsolved.

W. G. Pierce, A. O. Smith Corp., thinks unit construction will "return to its stronghold, the very small car." He means those with 100-in. wheelbases and under. Chrysler Corp. engineers, particularly, take exception to this opinion. All of their cars, except Imperial, have unitized bodies.

Hypothetical — But, Mr. Pierce claims most integral-frame cars could have been made with equal or less weight, as much room, and less noise and vibration if the latest separate-frame technology were used. He says the belief that integral-frame construction is lighter than body-frame stems "illogically from the fact that integral structure is lighter gauge."

Of similar opinion is M. A. Bowman, Parish Pressed Steel Div., Dana Corp. He says a decided advantage is that separate body-frame makeup offers design flexibility.

He cautions that universal adoption of unit construction could result in "restrictive cost and structural requirements" that would restrict design creativity.

Less Lead Time—Mr. Bowman notes the lead time required for a separate frame is three to six months shorter than for a body. Changes to a frame, he says, as a result of testing programs are quickly and economically made.

Fewer and less complicated separate frame sections are easier to tool and change, says Mr. Bowman. He also claims light-gauge steel in unit bodies is costlier per pound than heavier gauge, hot-rolled steel in separate frames.

Another View—In rebuttal, D. N. Frey and J. W. Richards, Ford Motor Co., say the main reason unit construction has appeal is cost and weight saving. Their company knows the pros and cons well. Thunderbird and Lincoln have had unit bodies for several years. Recently it has added unit body Falcons and Comets. There is also speculation over whether regular size Fords and Mercurys will adopt unit bodies in the next few years.

The Ford engineers agree that the benefit goes down as size goes up. Unit structure must change from monocoque, in which the body panels contribute largely to total structural capability, to integral frame, in which a chassis frame is welded integrally with the body. The

latter is used for heavy cars.

Difficult Switch — Mr. Frey says obsolete facilities and the need for new equipment are major obstacles in the path of such a change. To change the regular Ford to unit type, for example, would mean many changes at frame and assembly plants. It would require revision of other plants, such as those where suspension components are made.

He forecasts the ultimate potential of unit types won't be realized until new ways are uncovered for joining body structural members.

Mr. Frey believes unit construction is superior in efficiency to body-frame in cars up to at least 3200 lb. For cars 55-in. or lower, but over 3200 lb, the two types are about equal in cost. But development of this size unit car is harder, he says.

The Objective — Oldsmobile assistant chief engineer J. B. Beltz, points out the choice is mostly dictated by the objective of the car. Olds produces the body-frame Olds and the unitized F-85.

Mr. Beltz says the frame-integral approach has been tried experimentally on Olds 88's and 98's. "But it has yet to equal the ride softness, low road noise level and freedom from shake that the separate frame has given us."

He says during the next several years progress in both concepts will be made.

The way Olds and the rest of the automakers go in the next few years is still uncertain. But current production trends indicate a move toward unit bodies. In the 1959 model year, 468,000 unit body cars were built. This was 8 pct of total U. S. production. With Chrysler Corp. and several new compacts turning to unit bodies, the total climbed to 2,255,000, or 37 pct of production, in the 1960 model year.

With the exception of Studebaker-Packard Corp., all of the automakers are now using unit-body construction for at least part of their production. Experience gained over the next several years will help settle the issue.

Automakers Preview Metals Outlook

At meeting in Detroit, auto engineers heard a ten-year forecast on metal supply outlook and prices.

The overall opinion: Plentiful supplies with prices at or near present levels.

■ What's the ten-year outlook for automakers as far as metal supplies are concerned?

In the opinion of Richard J. Lund, assistant technical director, Battelle Memorial Institute, they can expect plentiful supplies with prices at or near current levels.

Addressing the SAE National Automobile Meeting in Detroit, he made these predictions:

On Steel Supplies: "It's difficult to visualize anything in the next decade causing any large change in availability or price relations." Competition with other materials at home and with foreign steelmakers will require every possible effort to hold prices at or below present levels."

On Aluminum: "Rapidly expanding capacity for aluminum reduction and fabrication abroad may well lessen our exports. This would intensify competition with other metals and materials in U. S. markets if aluminum is to achieve its expected growth."

On Other Metals: "Zinc reserves appear ample to supply the expansion in demand anticipated in the next ten years. The outlook for lead supplies is quite similar to zinc, but on the weaker side." Copper: "As in lead and zinc, the industry is pushing a research program aimed at expanded use, but is faced with continuing keen competition from other materials." Chromium: "Supplies are ample for the long-range future if sources from southern Africa remain available."

On Metal Prices: Metal prices may advance as inflation continues. Labor and materials costs will rise across the board, affecting all metals. Aluminum prices may go up moderately with respect to steel. Lead and zinc may move up moderately, zinc perhaps more than lead because of the better demand outlook.

On Competition: Keen competition will dominate the next decade, among various metals and between metals and plastics. Thermoplastics, where active promotion is starting, will probably make inroads. Plastics will not only join intermetallic competition, but different plastics makers will vie increasingly for markets served by metals.

On Research: Activity will increase substantially among metal industries. The aims: (1) Finding improvements needed to meet more exacting requirements of consumers. (2) Developing special alloys or products to serve these needs. Cost savings will be a goal with present and improved automation methods more extensively applied. Improvements should come in finding, mining, beneficiating, and extracting metals.

On Consumption: An important factor tending to curb increasing use of metals will be redesign or manufacturing changes of products for lower metal use per unit. An example, the compact cars.

On Inventories: The recent heavy drawdown of inventories by buyers of metals and other materials may indicate lower consumer stock levels in the future. This may come from more effective inventory controls, resulting in part from use of electronic computers. Or it may be simply a decision to pass part of inventory costs back on producers.

F. S. O'LEARY: No glory road to radical change.

J. W. SHAVER: The key man is the first line foreman.

Making Labor Contracts Work

Signing a new contract is the beginning, not the end, of sound labor relations efforts.

To make it work, you need daily administration, arbitration, court actions, and other methods.

By G. J. McManus

■ Although basic contracts were signed last year, three industries are working harder than ever to hammer out rules for labor relations.

Steel, aluminum and electrical companies say the general agreements left big issues to be settled. They say practical aspects are being developed by daily administration, arbitration, court actions and similar means.

Opening New Areas—Meeting in Pittsburgh at the Society for Advancement of Management, companies said off-season action is particularly intense this year.

Speakers made it clear management's efficiency drive centers on areas not spelled out in general contracts. Legal men explained how court decisions have opened up new areas for challenge and contention. All agreed the goal of efficiency with harmony depends mostly on day-to-day effort.

Problems in Steel—In the steel industry, the battle over past practices continues at the company and plant level.

"Fifteen pct of the grievances filed in 1960 involved past practices," says F. S. O'Leary, counsel for Pittsburgh Steel Co. At the local level, he says, it is not really accepted that a basic equipment change permits new practices. "There's no glory road," he says, even with radical change.

Mr. O'Leary feels the whole problem has been created by narrow, technical interpretations of arbitrators. He points out the courts have indicated broad powers for arbitrators. And he thinks labor umpires could cut through the present tangle with a little common sense and "judicial inventiveness."

Beyond this, Mr. O'Leary points out the contract prohibits use of a past practice to deprive a worker of an existing benefit. He feels arbitrators should consider that wasteful conditions may ultimately deprive a man of his job. Finally, he calls for statesmanship by all parties to establish a balance between stability and flexibility.

Aluminum's View—A different approach to the problem is discussed by J. S. Harrison, vice president, personnel and industrial relations, Aluminum Co. of America. Alcoa's contracts give the company full say in things like work standards, crew assignment, and scheduling. These matters are not subject to arbitration by a third party.

In return, the contract gives the union a legal right to strike in disputes involving management decisions. "In the early days," says Mr. Harrison, "this concept was thoroughly tested. As it has been understood, we have had a relatively in-

significant number of strikes."

Communicate — He emphasizes the doctrine of management rights carries with it responsibilities, particularly in the matter of communications. "Talk to the guy," he urges. And he admits the ideal concept can be subject to a little give-and-take.

The issue of seniority is creating its share of problems. For the steel industry in 1960, it was the number one trouble source, accounting for 23 pct of all grievances. Two dangers in this area are seen by G. E. Flaccus, Jr., vice president, industrial relations, Jones & Laughlin Steel Corp.

Seniority Issue—Mr. Flaccus feels there can be a tendency to overprotect the senior worker. This can be done, he says, by making seniority groups too broad or by making ability requirements too vague. He feels job assignment should be based on relative ability rather than minimum ability.

Mr. Flaccus feels excessive protection for the older man not only creates problems for the company, but is unfair to the junior employees.

Start at the Bottom—Discussing General Electric's bargaining success, P. H. Moore, manager, employee relations, says credit must go first to local management both for creating a favorable climate and for identifying employee needs.

A similar view is offered by J. W. Shaver, vice president, labor relations, United States Steel Corp. The key man in labor relations is the first line foreman, says Mr. Shaver.

He explains that U. S. Steel has a highly organized program for educating foremen in labor relations matters. After each big contract is signed, top labor men go over provisions to determine their meaning.

"We know what the intent was," says Mr. Shaver. "But only five or six men negotiate a contract for the company. We have to determine what their words will mean to the hundreds who will administer it."

New LIFO Regulation Can Mean Tax Break

New inventory accounting methods can soften tax bites.

Companies can now lump inventories in a single pool figured in terms of dollar value.

▪ Some corporations have felt a heavy tax bite in the past due to dwindling year - end inventories. They now can get a break under new inventory accounting methods.

The Internal Revenue Service's new LIFO (last in-first out) rules will reduce the tax bite when inventories fall.

They allow companies to lump inventories, including raw materials and finished goods, into a single pool figured solely in terms of dollar value.

Separate System—Under the old regulations, a company had to operate with several separate pools. They were measured in terms of weight or units as well as dollars.

The benefit of the single pool, Treasury officials says, is that a combined inventory is less likely to fall below the previous year's level.

"Paper Profits"—The new rules ban large "paper profits" and related taxes for firms using LIFO.

LIFO, in which inventory most recently purchased is assumed to be the first sold, generally cuts taxes in periods of rising prices. It may mean higher taxes when prices fall.

Steel Strike — Many steel producers, fabricators, warehouses and others were caught with large profits on paper in December of 1959. Steel inventories could not be replenished because of the strike.

Treasury officials say the new regulations make LIFO "a lot more attractive" to companies. It protects them not only in times of falling prices, but when they must liquidate parts of their inventory.

The regulations stress the single pool must be set up along "natural business" lines.

Lumped Inventories — A company of one natural business unit can lump all inventories, including raw materials, goods in process, and finished goods, into one pool.

The rules permit three ways to compute the LIFO value of a dollar-value pool. They are: 1. The double-extension method. 2. The index method. 3. The link-chain method.

Taxpayers wanting to change their inventory accounting methods must submit the following information with their income tax returns:

1. A description of the new inventory pool or pools.

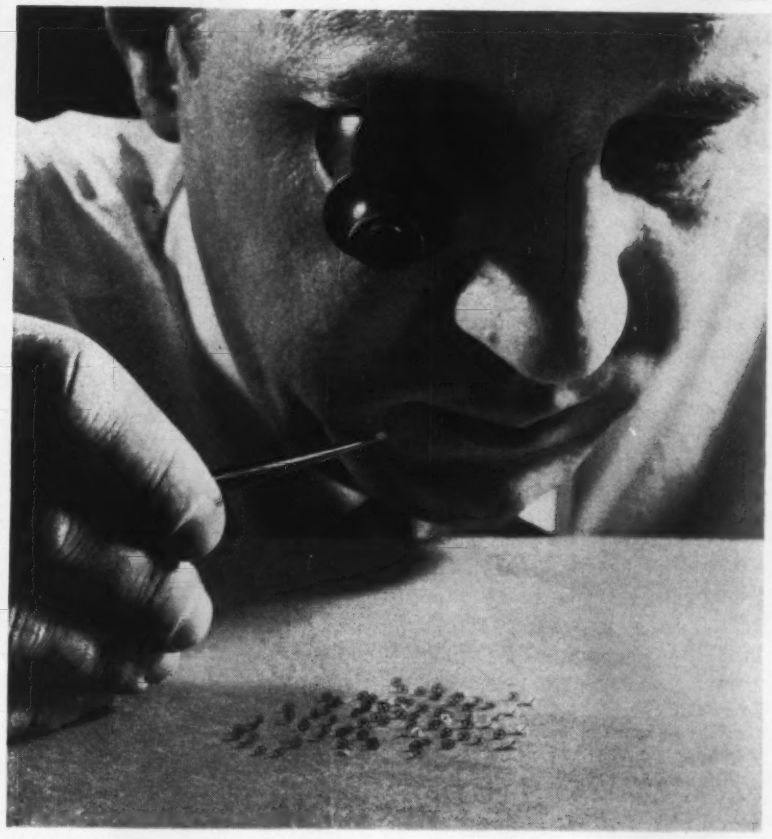
2. The basis for selection of the new pool.

3. A schedule showing the computation of the LIFO value of the former pool.

4. A schedule showing the transition from the former pool to the new pool.

A copy of the statement also must be filed with the Commissioner of Internal Revenue; attention: T:R, Washington 25, D. C.

Miniature Marvel: Electronic Wrist Watch



AWARD FOR ACCUTRON: Bulova Watch Co., Inc., has won the 1960 Miniaturization Award for its new electronic wrist watch. Called the Accutron, it topped 117 entries in the contest sponsored by Miniature Precision Bearings, Inc.

The Accutron is based on continuous vibrations of a one-in. tuning fork. The fork's oscillations are maintained and its amplitude controlled by a transistorized electronic circuit powered by a small mercury cell. The vibrations turn a microminiature indexing wheel gear, linked to a gear train which drives the hands.

Max Hetzel, Bulova chief physicist and inventor of Accutron, is shown inspecting the 300 precisely machined teeth on the gear's circumference.

Contractors to Get Defense Pay Faster

The Pentagon is going to start paying full contract progress costs to defense contractors.

This will end the present Defense Dept. policy of paying only 80 pct of contract costs until the contractor delivers the completed contract items.

At present, about $175 million in withheld payments are owed to contractors. The new policy will allow them to seek these back payments immediately.

In the future, the companies will be paid in full for incurred costs as work on the contract progresses.

Home Builders Push $3.5 Billion Program

A sharp upturn in construction of moderately-priced homes is forecast by builders if Congress approves President Kennedy's $3.5 billion housing program.

Construction industry spokesmen in Washington are telling Congressmen the program will be a boon to them and related industries such as metalworking.

Kaiser Plans Plant For Tabular Alumina

A major facility to manufacture tabular alumina will go up at the Baton Rouge, La., Works of Kaiser Aluminum & Chemical Corp.

Tabular alumina is a high purity aluminum oxide converted into a chemically inert and highly dense nodule form. It is used in making high temperature refractories, automotive spark plugs, and in electrical and electronic applications.

The new plant will increase fivefold Kaiser's capacity to produce tabular alumina.

Two Navy Contracts Total $14.5 Million

The Navy has awarded contracts totaling $14.5 million.

A follow-on contract for $9 million was awarded to Pratt & Whitney Aircraft Div., United Aircraft Corp., East Hartford, Conn., to develop the TF-30 turbo-fan engine.

A $5.5 million contract was given to Remington Rand Univac Military Dept., St. Paul, to produce additional computer systems for the Navy Tactical Data System (NTDS).

Capital Spending Up In British Steel

Capital spending by Britain's iron and steel industry totaled $400 million last year. This is nearly 50 pct more than in 1959. It is also close to the individual company estimates of early 1960. In earlier years, spending usually fell below estimates.

Forty-seven pct of capital outlays went for rolling mills and finishing equipment in 1958. The estimate for 1961 calls for the spending of 58 pct of the total for these facilities.

INDUSTRIAL BRIEFS

Harper Buy—H. M. Harper Co., Morton Grove, Ill., has acquired Anti-Corrosive Metal Products Co., Castleton-on-Hudson, N. Y. Both companies specialize in stainless steel industrial fasteners.

Consolidation — Consolidated Aluminum Corp., Jackson, Tenn., has acquired the National Foil Co., Inc., Elizabeth, N. J. Conalco also acquired AIAG Metals, Inc.

Coast Purchase — Cerro Corp. has acquired United Pacific Aluminum Corp., Los Angeles. A producer of painted aluminum strip, United will operate as a division of Cerro.

In Control—Koppers Co., Inc., has acquired a controlling interest in the Thomas Flexible Coupling Co., Warren, Pa. Koppers now offers three top coupling names, Fast's, Holset and Thomas.

Sound Buy — Howe Sound Co. has acquired Electric Wire Co., Inc., Northampton, Mass., stainless steel wire producer. Howe has also formed from previously owned facilities the Howe Precision Co., as electronics hardware producer, with plant and offices in Royersford, Pa., and foundries at Lansdale and Fair View Village, Pa.

Nickel Purchase—Gould-National Batteries, Inc., St. Paul, has acquired equipment of Cleveland Graphite Bronze Div., Clevite Corp., Cleveland. Involved in the purchase is the entire sintered battery plaque operation including machinery, equipment, parts, molds and engineering operations.

Tool Trade — St. Mary Mfg. Corp., North Tonawanda, N. Y., has acquired the Special Tooling Div., Pivot Punch & Die Corp.

Move to Merge—Midland-Ross Corp. and Industrial Rayon Corp., Cleveland, plan to merge. Upon approval of shareholders, Industrial Rayon will become a division of Midland-Ross, manufacturer of diversified products for the automotive, steel, appliance, electronics and aircraft and missile industries.

Houston Asset—Pittsburgh Standard Conduit Co., Verona, Pa., has acquired as a division the Houston Plastic Bonding Co. It will continue producing heavy plastic coating for electrical conduits and fittings in the Houston plant.

Stamping Switch — Johnson & Hoffman Mfg. Corp., Mineola, N. Y., has purchased the inventory, machinery and equipment of the Stamping Div., Fred Goat Co., Inc., Brooklyn, N. Y. Johnson & Hoffman manufacturers precision stampings and deep drawn parts.

Tractor Takeover—FWD Corp., Clintonville, Wis., has acquired all capital stock of Wagner Tractor, Inc., Portland, Ore. FWD is a pioneer manufacturer of all-wheel-drive vehicles.

Wheels Turn—Manhattan Rubber Div., Raybestos-Manhattan, Inc., Passaic, N.J., has acquired the abrasive and grinding wheel business of U. S. Rubber Co.

Claims Staked—U. S. Beryllium Corp. has acquired the BER claims on Badger Flats in Park County, Colo. The 14 claims were formerly held by Denver-Golden Corp.

Stupp Name — Cal-Metal Pipe Corp., Baton Rouge, La., has changed its name to the Stupp Corp. It is a wholly owned subsidiary of Stupp Bros. Bridge & Iron Co., St. Louis.

Hardware Step — Curtis Industries, Inc., Cleveland, has formed a new division to market hardware items. The line includes electrical items, special tools, nuts, bolts, screws and fasteners.

Diversified Name—Minneapolis-Moline Co., Hopkins, Minn., has changed its name to Motec Industries, Inc., to reflect the diversified activities of the company. Besides the farm equipment division, others are Mopower Construction Equipment, Molectronics, Mohawk Foundry & Forge, Moline Automotive, Motec International, and Mocraft Power Tool.

Lord Division — Lord Chemical Corp., York, Pa., is now known as Lord Chemical & Equipment Div., Wheelabrator Corp., Mishawaka, Ind. Lord will continue to manufacture precision finishing equipment, media and compounds in York and Red Lion, Pa.

Eastern Change—Eastern Malleable Iron Co., Naugatuck Conn., has changed its name to The Eastern Co.

Name Change—Flour City Architectural Metals Div., Hupp Corp., is the new name for Flour City Ornamental Iron Co., Minneapolis. The new division is one of two units purchased by Hupp.

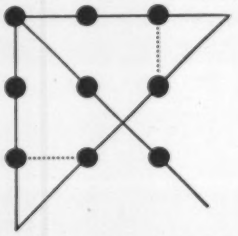
Parent's Name—Jelrus Precision Castings Co., New York, has changed its name to that of the parent company, Casting Engineers, Chicago.

Marketing Method — Ulbrich Stainless Steels, Inc., Wallingford, Conn., has introduced a new method of marketing stainless steel Shim Stock. It has designed a stock dispensing rack with catch-weight coils which helps fill customer orders swiftly. As a result, the price for tempered, light-gauge shim stainless has been reduced.

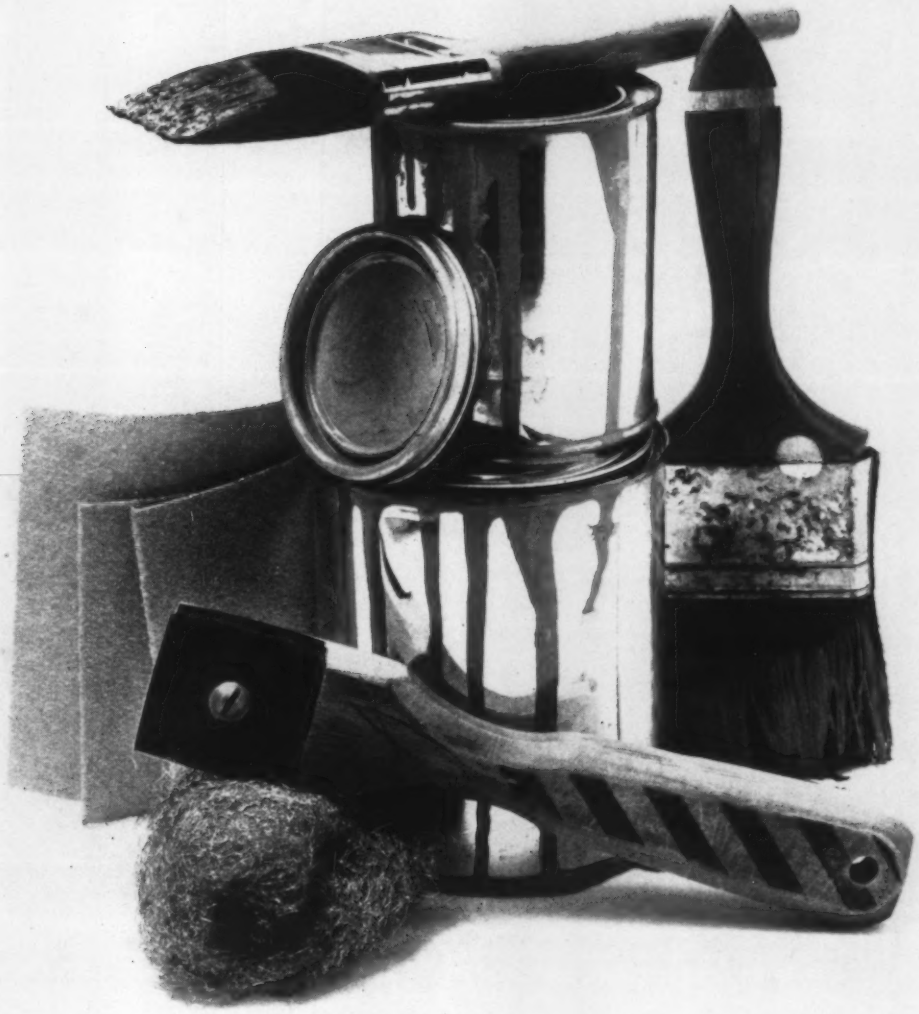
Customer School—Vickers Inc., division of Sperry Rand Corp., held its first customer training school in Detroit.

(Advertisement)

Solution to problem on page 14



Drawing lines beyond the dots produces a simple solution. In selection and application of steel, aluminum, plastics and metalworking machinery, don't settle for the obvious. Be "Metalogical"—call Ryerson.



Who needs them anymore?

Certainly not the consumer who buys aluminum products. He doesn't need to scrape an aluminum boat or paint an aluminum lawn chair. But ease or total lack of need for maintenance is only one of the reasons more and more people are buying aluminum products. Olin Aluminum, through its engineering and design services, has helped many fabricators produce better aluminum products at far less cost. When these quality improvements and savings are passed on to the public, sales go up. Chances are, Olin can show you ways to save and translate new ideas into aluminum. Call your nearest Olin Aluminum Sales Office. The very latest technical help is on the way.

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Between these two extremes you'll find a Timken® tapered roller bearing to fit every combination of radial and thrust loads, for all kinds of mountings, and for virtually all operating conditions. This most complete line of tapered roller bearings is sold and serviced by graduate engineers who can help you select the one bearing, from hundreds of possibilities, that will give you the most for your bearing dollar.

Make sure you check with your Timken bearing representative. He can tell you which bearing is the most economical for your application. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO". Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits. Canadian Division: Canadian Timken, St. Thomas, Ontario.

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tapered roller bearings

Will Depreciation Reform Help?

How much benefit the economy gets from improved depreciation depends on the size and type of program.

Tax credit plan, apparently favored by the Administration, has strong disadvantages, according to MAPI.

■ How can tax depreciation allowances be improved? Which system of depreciation is best for you—and the economy?

Right now, these are important questions. Some reform is coming. The Treasury and the Small Business Administration surveyed industry on what's needed. They have the results.

President Kennedy has urged that tax laws be modified to encourage more spending for plants and equipment.

Three Needs—Current action, in the tax field, should meet three objectives, the Administration believes. It should have a dynamic and immediate effect on the economy. It should get maximum investment impact to offset every dollar of tax loss. And, to fight the recession, it should have a countercyclical effect on business.

But still the big question is: What type of reform will be recommended? The President's task force on taxes is believed considering a tax credit plan. This credit would be a specific percentage of the **excess** of a firm's capital spending over its depreciation accruals.

The Machinery and Allied Products Institute gives these assumptions in a new report. MAPI, which has crusaded for long-range improvement in depreciation, believes the Administration is now more interested in plans having an immediate economic impact.

Aims and Methods—Says MAPI: "If the Administration's decision is to give investment a major boost promptly, then a technique like initial writeoff is preferable to long-range, 'slow-burning' reform."

This being the case, MAPI discusses the aims and methods of such a program.

"With investment cut back and the capital goods industries slack, it's the ideal time for a big push. No convincing reason appears for a program that merely nibbles at the problem.

"An incentive having a revenue impact of $1 to $2 billion has been discussed in some quarters. Such an incentive would have little more than token effect."

Some Suggestions—On a reform program giving immediate impact, MAPI has these recommendations:

A bold and major program is needed, rather than a limited or token effort.

There must be continued attention to long-range depreciation reform.

Any plans should consider the widely differing circumstances of the companies involved. (For example, if a business is big or small, whether it wants to modernize or expand, etc.)

Comments on Proposed Plan

■ Then MAPI turns to the prospect that the task force may recommend a tax credit plan. This would be a stated percent of the **excess** of a company's capital spending over depreciation accruals.

There are certain disadvantages to this, MAPI notes. These include:

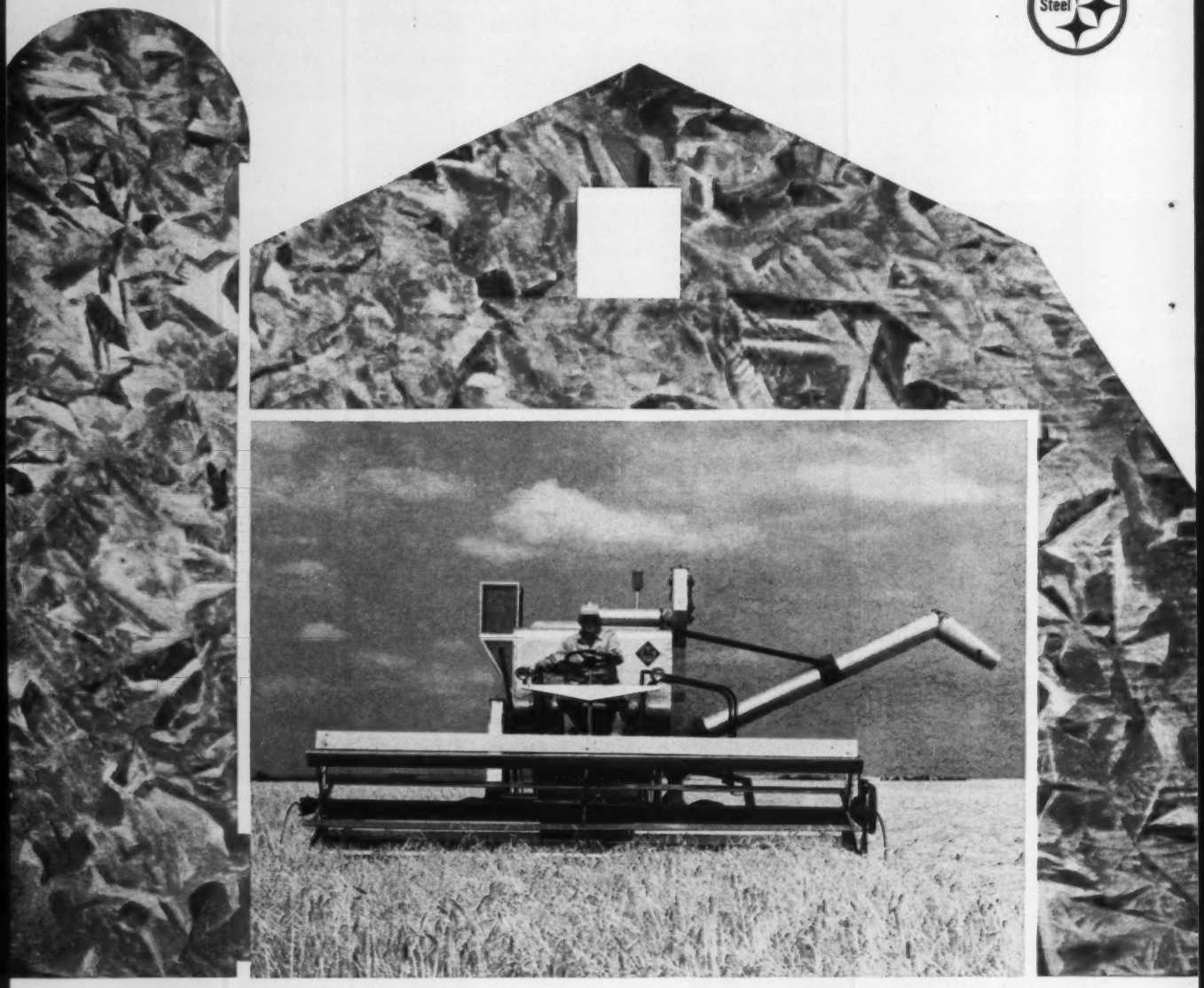
Bunching—"If the device is applied separately to each tax year, it will tend to place a premium on "bunching" capital outlays in selected years. This would be done in order to get maximum benefit from the credit." Companies could hold back on funds in periods of recession, hoarding them for prosperous periods.

Unequal Cumulation—"Companies spending less than their depreciation will have the deficiency carried forward and offset against surplus spending of later years before any tax credit can be claimed."

But companies with large deficits from prior years will lose any incentive to try for the credit, since their "pay point" will be deferred far into the future.

Other defects listed are these: The plan would encourage separate incorporation of new operations for tax benefits. Its benefits would be concentrated in rapidly growing industries, where capacity, not modernization, is more important.

Allis-Chalmers combines fend off corrosion . . .



GUARDED BY GALVANIZED STEEL

When you see a big Allis-Chalmers combine like this cutting grain on the farmlands of America you can be sure that galvanized steel has been used in its construction.

Reasons? First, galvanized steel provides excellent weather protection and low maintenance cost. Neither dew nor drizzle nor drenching rain will find a chink in its zinc coating. That holds true regardless of the severity of the fabricating steps to which it may be subjected. And in addition to its corrosion resistance, galvanized steel has a lot of resistance to high cost: It's easy and economical to fabricate, construct and maintain.

WEIRKOTE® IN PARTICULAR! The galvanized steel used in these combines is National Steel's Weirkote. To the inherent strength, economy and versatility of steel, Weirkote adds enduring zinc protection via the modern continuous process. As a result, Weirkote can be worked to the very limits of the steel base without chipping or peeling. And it assures you of long-lasting protection against corrosion. It is manufactured by two National Steel Corporation divisions, Weirton Steel and Midwest Steel. Write Weirton Steel Company, Weirton, West Virginia, for further details.

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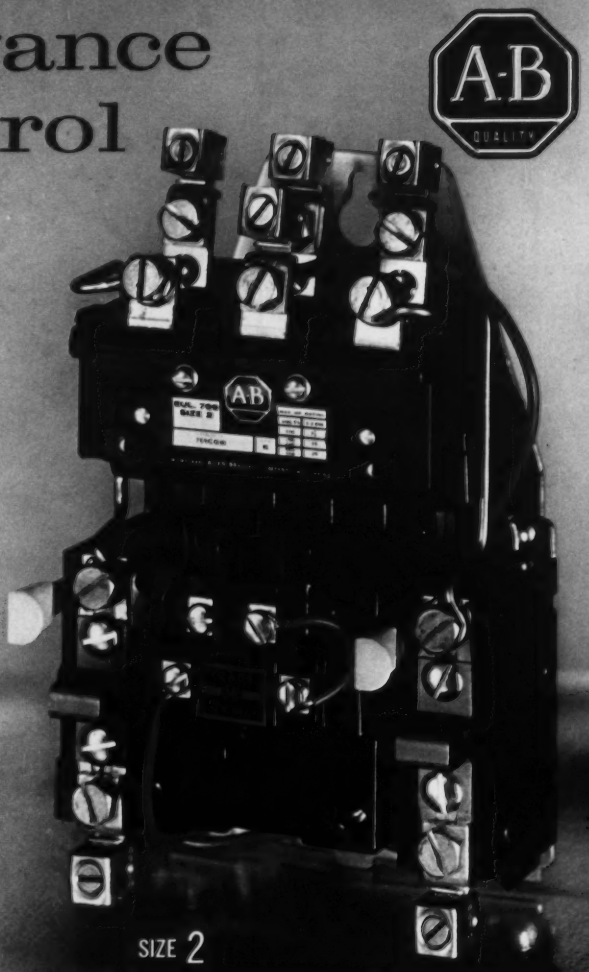
a new line of Bulletin 709 motor starters by ALLEN-BRADLEY

- smaller size
- greater interrupting capacity
- even more millions of trouble free operations
- more wiring room
- elegant styling
- A-B "quality" throughout

A "family" of 7 starter sizes ... each one entirely new

greatest advance in motor control in 30 years



SIZE 2

New Bulletin 709 Solenoid Motor Starter

In appearance . . . in performance . . . in physical size and weight . . . these Allen-Bradley Bulletin 709 solenoid starters are *completely new in every way!*

NEW COMPACTNESS. Size reductions are so drastic you'll hardly believe your eyes. The tables below will give you some idea of how the new line of Bulletin 709 starters compares with the old.

A TREMENDOUS INCREASE IN LIFE—both mechanical and electrical. All of these new starters are good for many more millions of trouble free operations.

NEW PATENTED MAGNET. For its weight and size, the most powerful magnet used on motor control. Its short, cushioned stroke assures long contact life. A new, permanent air gap prevents any possibility of magnetic sticking. "Snap action" guarantees positive contact opening and closing.

NEW MOLDED COIL. Impervious to atmospheres that could cause trouble, and also protected against mechanical damage. All coils are easily removed—from the front of the starter.

NEW CONTACTS. New double break contacts of cadmium oxide silver resist welding . . . close and seat firmly without sliding or wear-causing motion.

NEW OVERLOAD RELAYS. Not only "trip-free" but also "tamperproof," to reliably protect motor and machines. Of course the new relays were designed to use the old Bulletin 709 heating elements which you have in stock.

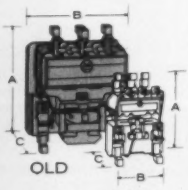
NEW ENCLOSURES. Completely restyled by Brooks Stevens—and so modern. They are a sales asset on any type of modern machine or industrial installation.

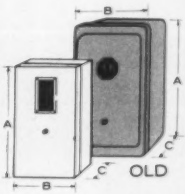
BETTER WRITE FOR MORE INFORMATION ON THIS REVOLUTIONARY NEW BULLETIN 709 STARTER!

CHECK THE "NEW" WITH THE "OLD" BULLETIN 709 DIMENSIONS

The wiring room in the new enclosures will delight the electrician.

Starter Size	OPEN TYPE STARTERS					
	NEW			OLD		
	Height A	Width B	Depth C	Height A	Width B	Depth C
00	3⅝	3⅞	3¾	—	—	—
0	5⅞	4 1/16	3 1/16	5⅝	4¾	3¼
1	6⅝	4½	3 1/16	5⅞	5	3¼
2	7¾	4⅝	3 1/16	10 1/16	5⅜	4⅞
3	10¼	6¼	5⅞	12⅝	7¼	5⅞
4	11 7/16	7 5/16	6¼	16¼	12¾	6 1/16
5	14 13/16	9	6½	20	16⅛	8¾





Starter Size	NEMA 1 ENCLOSURES					
	NEW			OLD		
	Height A	Width B	Depth C	Height A	Width B	Depth C
00	7⅝	4⅞	4¼	—	—	—
0	9⅛	6 5/16	4⅜	7⅞	5⅜	4¼
1	10	6 13/16	4⅜	8 13/16	6⅜	4¼
2	12	7⅝	4⅜	14½	9	5⅞
3	16⅝	10⅜	7	19½	11⅜	6 1/16
4	22	11⅝	8	26 5/16	14 3/16	7 1/16
5	32 3/16	17 1/16	9⅞	41½	19 3/16	13 3/16

8-61-RH

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Close-Ups Of
INDUSTRIAL JAPAN

Part I

How to Do Business in Japan

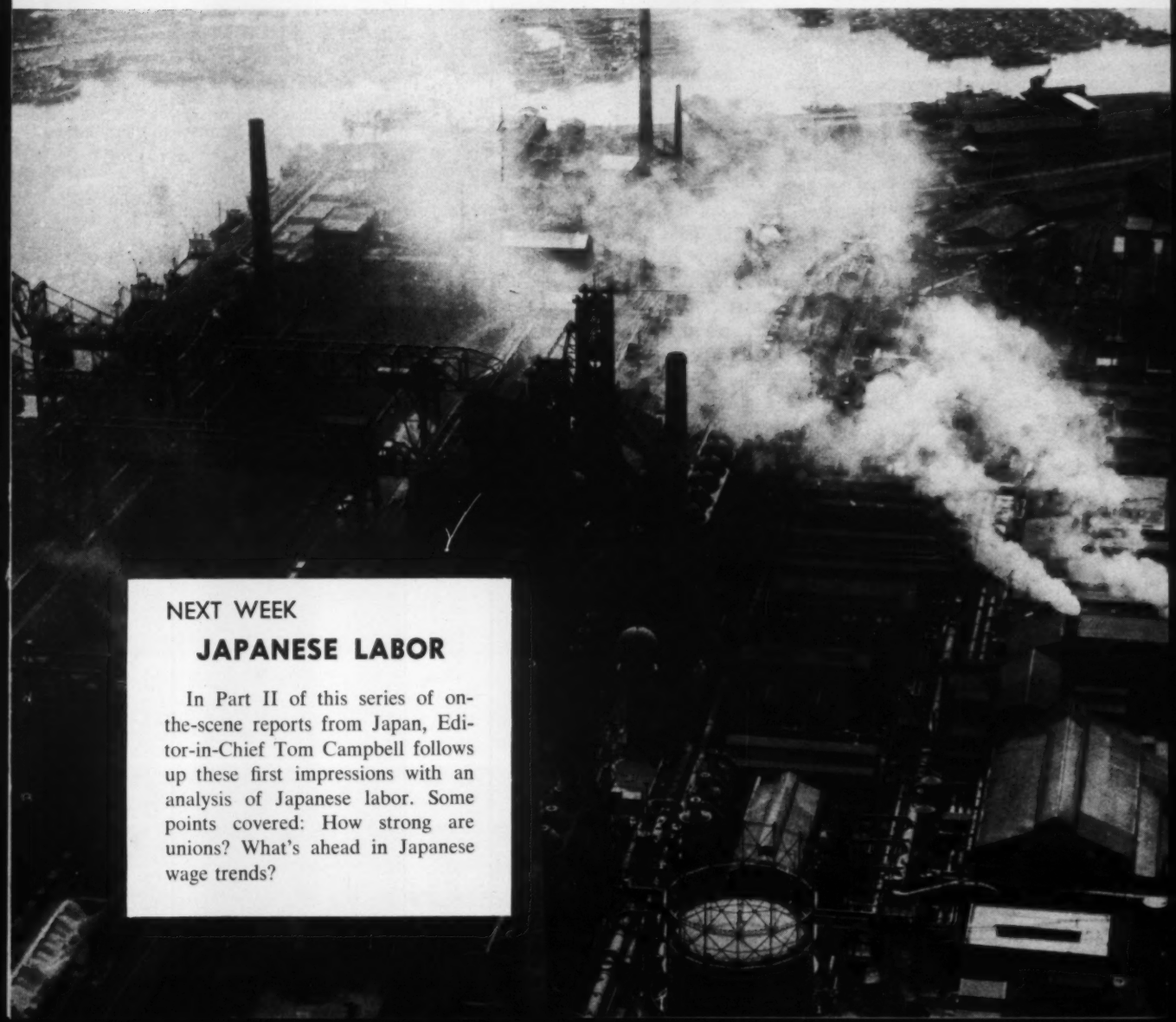
If you are going to do business in Japan, it's wise to do some homework.

Here are some tips on what (and what not) to do in Japan. By Tom Campbell

▪ When packing for your business trip to Japan, carry a few things besides your baggage. Perhaps the following will do much for you: Patience, calling cards, an itinerary that can be changed easily—and a big dose of humility.

Most of these items will do you as much good as your business knowledge. But there are also a few things you can do long before you leave the USA.

Advance Contacts—Your com-



NEXT WEEK

JAPANESE LABOR

In Part II of this series of on-the-scene reports from Japan, Editor-in-Chief Tom Campbell follows up these first impressions with an analysis of Japanese labor. Some points covered: How strong are unions? What's ahead in Japanese wage trends?

pany should have some kind of a definite contact in Japan — especially in Tokyo, the home office hub of all that goes on industrially in Japan. To come here cold without any strong ties would be useless and a waste of time.

But over and beyond company ties or liaisons in Tokyo, you need a personal contact. It may be that he will be the same person who represents your firm. Without him, you are also lost. Visiting and doing business in Japan is a complex but exciting experience. How you get started determines your future relations with your contacts, with Japanese firms, and with Japanese business people.

What's Needed—Obviously, the booklets and communication pamphlets put out by companies, airlines, and the government will tell you the simple "musts" pertaining to customs, means of getting about, and what to do in this or that situation. But that is skin deep. You need far more than that.

Our business man coming to Japan usually stays at the Imperial Hotel—at first, anyway. There he has all the comforts and conveniences — personal and business-wise—that he has at home. And the first thing a knowledgeable man does is to take a long rest as soon as he arrives at the hotel. The last thing in the world he does is to rush immediately at a hundred and one projects he planned while in the States.

Adjust to Change—It takes a few days to throw off the effect of the vast change in time and distance, and the fact that you are now in a part of the world that is different from Europe, U.S.A., South America, Canada, Mexico, or even Africa. Unfortunately, some men do not believe this or fail to heed their personal representative who meets them and who helps them carry on their business.

An oldtimer here then would suggest that the second thing to be done is to change completely the nicely typed and apparently logical itinerary set up in the U.S. Your consultant or your man-in-charge will tell you that your potential Japanese friends will want to know in detail what you are going to do, when you are going to do it, how long it will take, and how much free time you will have.

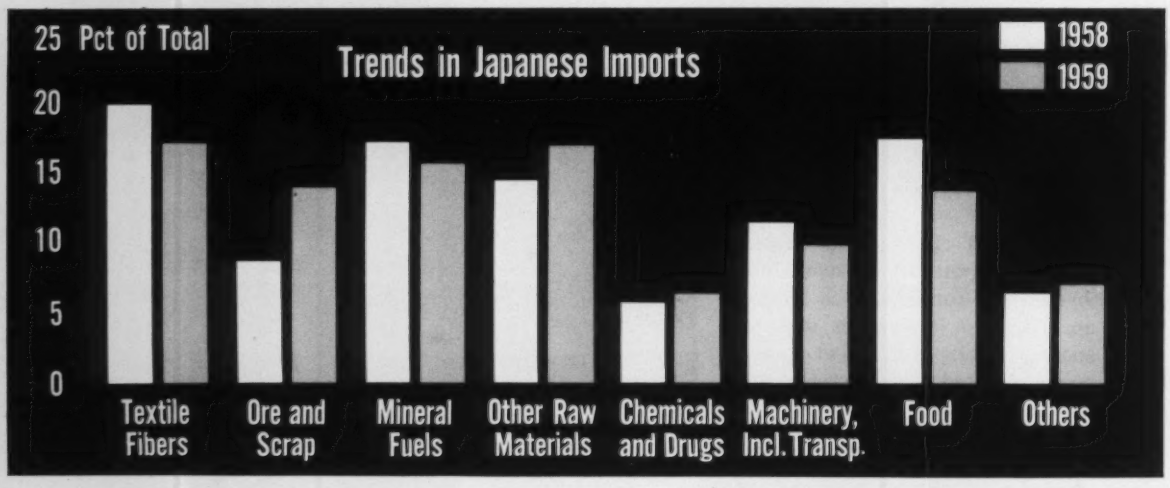
Reasons Why—The desire for this detail is nothing but an attempt to be able to help you in every way possible. The Japanese are by nature a courteous people; it is not a pose. Those who know the ropes suggest that you put yourself in the hands of your man in Japan and that you agree with the travel plans, suggestions, and new itinerary made by your Japanese hosts.

That you have important business to attend to and that your competition is also here in Tokyo is not a relative matter until you are completely tuned in on your new program. That's where the patience comes in. You will need it, but that's not too strange. You need it at home and you certainly need it in South America and Europe. Don't criticize Japan because she appears different—she is, but that is another story.

Keep Cards Handy — Referring to calling cards: It might be well to have some made as soon as you get to Tokyo. Here is the reason: In Japan, it is almost like our youngsters back home with their trading cards; everyone exchanges cards here. Also, it is very nice to have the names of your friends, their telephone numbers — which you could not look up anyway— and a record to take home with you. They, on their part, want your card. They want to see what your company is, what your title is and where to contact you.

By having your card made in Tokyo (It can be done in three hours), you may have the reverse side printed in Japanese, where it also can describe your business in a line or two. Certainly your new-

How the Japanese Trade Pattern is Changing



IN TOKYO: Tom Campbell interviews businessmen, American and Japanese, on the art of doing business in Japan. Left to right, Tom, Tadayoshi Yamada, manager, Foreign Affairs Dept. Yawata Iron & Steel Co.; Kazo Vechi, also of Yawata's Foreign Affairs Dept.; and Albert O'Connell, assistant to the President, Drever Co., a veteran of years in Japan.

found Japanese friend or your own consultant contact will arrange the card business. To fail to offer your card almost immediately could be a breach of courtesy.

Learn Humility — Now about that humility. This is not trying to make a case that if you don't have it you are an Ugly American. It is a simple international fact that to be a little humble will help you at home, in Japan, on the Nile, in Lapland, or in any part of the globe.

Also, the Japanese are a conquered people with the conquerors having attempted to give them "their" brand of democracy. So it will help in social and business relations if hauteur, a slight trace of arrogance, or thoughtless boorishness is left at home.

Modern Side, Too—True, Japan will show you a modern visage in places, an ancient one in other places. You will see the most modern machinery and techniques one place and the oldest in the world at another. But make no mistake about it; these 92 million people on this small group of islands are going places; they are working for it; and they face problems which make those at home seem fly specks.

One of the outstanding things you will feel rather than see is the difference in philosophies and perhaps ethics. But before you leap to any conclusions, recall that at home we have some peculiar—to others—ways of doing things too.

Question of Ethics—Some of our Americans in Japan appear to be troubled about the rightness or wrongness of this or that Japanese action. Yet those who attempt to know these industrious people suggest that wherever we use the word "right" or "wrong," we should substitute the word "different." That is what it is; a difference of life, of morals, and of customs.

At home, Americans are used to negotiating a package deal. This happens in projects, expansions, labor contracts, or in any activity in American business. It is different in Japan. Here, the Japanese businessman will drive a hard bargain on each part of the whole—one part at a time.

Employment Problems — Here, too, there is unemployment or under employment. Here, too, the question of the future frightens some Japanese leaders. Here, too, the fear of recession hovers in the background of a boom or boomlet. So it is quite natural for the Japanese businessman to put on the strongest pressure when bargaining for equipment, technology, or where prices are involved.

Take the case of a big deal going on while this was being written. Members of at least five American companies were here for D day on awarding, or at least closing, the period of negotiating on prices for heavy equipment. Everyone was on edge. Pressures were high. Tempers —except those of men who know their way around—became frayed.

Preceding this D day were meetings which would try the patience of Job. But that is international life —especially when trying to sell the Japanese. It is their way of life:

To go back time and again to questions previously asked. Reason: To be sure the American knows what he is talking about.

To try to get the lowest price possible, probably by an ancient gimmick of getting the competitors to supply the lowest price by their own device of bidding against each other.

To review and then again review the program, its merits, its promises, its quality, and probable effect on the Japanese industry, economy and future.

To bargain on each point or parcel of the whole job until, when it is fitted together, the lowest price with the best terms is obtained.

Lest the above scare you, remember:

1. American companies willing to learn and to work at trading with the Japanese do not lose money in their dealings here.

2. No matter how hard the bargaining or the terms are, the potential for profit is great in Japan.

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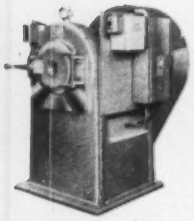
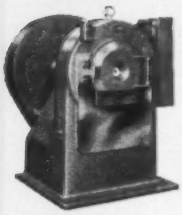
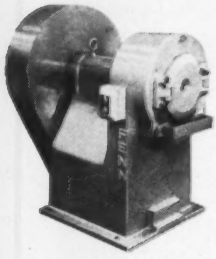
ARE YOU MACHINING WHEN YOU SHOULD BE SWAGING?



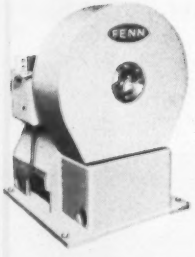
Rotary Two-Die



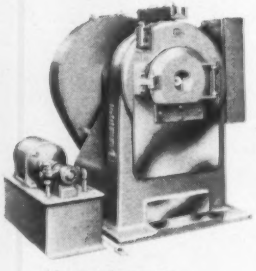
Rotary Four-Die



Long Die



Stationary Die



Hydroformer

Cost conscious manufacturers are finding it extremely profitable to design the components of new products . . . or redesign old ones . . . for production on Fenn swaging machines. What's more, in many cases swaging makes it better. On the *money saving* side, here are important considerations. Low investments in both machines and dies, the absence of chips with resulting savings in both metal and chip handling, lower labor costs because highly skilled operators are not required, and savings in time . . . for swaging is simple in operation, whether manually or mechanically fed. On *making it better*, swaging improves the physical characteristics of the metal, imparts a high finish, maintains continuous accuracy to within $\pm .001''$, and performs many operations possible by no other method. Your nearest Fenn sales engineer can competently advise you on possible application to your product.

For complete guide to rotary swaging and technical data on the Fenn line, write for Catalog SM-60. The Fenn Manufacturing Company, Fenn Road, Newington, Connecticut.

Only FENN *makes all types of swaging machines*

Copper Fights Cost Problems

Research Shows That Markets Are Ready If—

Unless certain copper costs drop, other metals—aluminum, for example—will capture larger shares of the auto market.

This is the finding of recent research by the Copper Products Development Assn.
By A. E. Fleming

■ Suppliers of copper to the auto industry have recently indulged in some soul searching.

Research for the Copper Products Development Assn. offers several conclusions. Among them:

Unless the copper radiator price drops, aluminum is likely to take this market. Chief engineer of a radiator manufacturer thinks the final decision between copper and aluminum will rest on cost. Strength and weight will be minor considerations.

Big Factor—A big cost factor is rolling copper to thin gauges. A process has been partly developed to the point where high-quality foil is made with a prospect of cost reduction.

In car heaters, principal use of the metal is in copper foil cores. Electric motors for circulation contain some copper; the diecast housing often is a copper-bearing alloy.

Price of copper is critical and efforts are made to reduce its use whenever practical. One possible reduction: Brazing copper and pieces to steel tubing. The copper end is needed to get a good Freon seal.

Aluminum Markets—Aluminum is expected to hold onto the market for fins for air-cooled engines. But a cheaper use of copper in the engine head structure could change this. One maker of air-cooled engines has been delving into a head using high conductivity copper for extended surfaces. As presently conceived, about 30 lb of copper would be needed per engine.

One automotive lab is developing a stamping method for making cylinder heads and manifolds from aluminum for water-cooled engines. This might hold copper possibilities, too.

Octane Aid—Heads are made from stampings of sheet stock. There's a possibility that heads made this way—with thin combustion chamber walls of a high conductivity material—would aid the octane requirement of the combustion chamber. Smooth surfaces from stampings collect deposits slowly.

Sintered copper-base friction materials, used in such products as clutch facings in automatic transmissions, brakes, clutches and copper ceramics, under development contain 55 to 80 pct copper.

In some cases there's pressure to reduce prices. There will be a rapid decline in copper use in automatic transmission clutches since a way has been found to use paper as a facing material.

Brake Development—In another area, a copper brake has been developed for trucks. This involves a two-step cooling system with a copper heat exchanger.

Simulator Aids Driver Trait Study

REALISTIC: General Motors Research Laboratories has developed this analog driving simulator to test driver and vehicle control characteristics. The screen in front of the driver simulates a full-size highway.

Alaska's Mines Are Weakening

Mineral output in Alaska is dropping off rapidly. A metals authority says output will fall 50 pct by 1965.

The expert is Dr. Ernest N. Patty, president emeritus of the University of Alaska.
By R. R. Kay

■ Despite some glowing reports, the mineral industry in Alaska is not really healthy. The exception is the potential in oil and gas.

This is the opinion of Dr. Ernest N. Patty, president emeritus of the Univ. of Alaska. He's a leading authority on Alaska's mineral resources.

The gold resources that gave the new state its wealth at the turn of the century are now being immobilized by an economic vise. On the one side is the fixed rate of the metal; on the other side is the rising production costs.

Production Down — Dr. Patty told an IRON AGE correspondent in Alaska that there isn't an important underground mine left in the state. Prewar production of $20 million annually is now down to $6 million. Unless there's a change, he predicts a further decline to $3 million per year by 1965.

Mining of other metals is suffering from foreign competition. One exception: The successful uranium operation at Good News Bay.

Marginal Ore—The last real iron ore discovery in Alaska came in 1957. The discovery was made by Humble Oil Co. But the ore is reputed to be so marginal that it must await more profitable times.

It's known that the Japanese are eyeing this property. They might be able to link the ore to Alaska's coal resources which have yet to be really tapped.

Says Dr. Patty: "We are going to work closely with the Japanese. They're short of a lot of basic materials."

Production Increase Slated for T-39

Production of the Air Force's twin-jet T-39 Sabreliner is due to be increased at North American Aviation, Inc.'s Los Angeles Division. The company says the rate will be increased from one to five planes per month.

The first production boost will be noted this month. Two Sabreliners are slated to come off the assembly lines by March 31. Additional tooling is being installed on the lines. Five-per-month production is planned by September.

Scores a Bullseye From One Mile

ALUMINUM TARGET: James J. O'Reilly, test pilot for Hughes Aircraft Co., holds a 36-in. aluminum disc target. It was hit by the Air Force's GAR-4A heat-seeking air-to-air Falcon missile at Holloman AFB, N. M.

"The superior quality is evident at first glance . . .

. . . that's why we recently decided to stock ***LUSTERIZED***® *cold finished steel bars"*

SAYS J. T. ERWIN, VICE-PRESIDENT OF ELLIS-ERWIN SUPPLY CO., INC., TAMPA, FLA., who stands in the group at the right with J. E. Ellis, Jr., Sales Manager, W. Gray Ellis, Purchasing Agent and E. C. Cox, Office Manager.

BLISS & LAUGHLIN LUSTERIZED bars are immediately distinguishable from ordinary cold finished steel bars in the racks at Ellis-Erwin, Mr. Erwin reports. Mr. W. Gray Ellis and Mr. Erwin are shown checking the close tolerance and superior finish of a Lusterized bar.

THE SAVINGS that can be realized during production with Lusterized Finish bars are figured by Mr. Erwin and Mr. Ellis.

When a long-established steel service center decides to concentrate on selling a particular line of cold finished steel bars, the bars obviously must be superior.

That is precisely why Ellis-Erwin Supply Co., Inc., Tampa, Fla., selected Bliss & Laughlin Lusterized Finish steel bars.

Mr. J. T. Erwin, Vice-President, writes: "We intend to expand our cold finished sales considerably in 1961. There is a marvelous opportunity in our area with your products. The exclusive quality-pluses and the fast service you render will help us achieve our goal of furnishing the best products to our customers . . ."

This is another example of why more progressive steel service centers stock and recommend Bliss & Laughlin Lusterized Finish bars than any other cold drawn bars.

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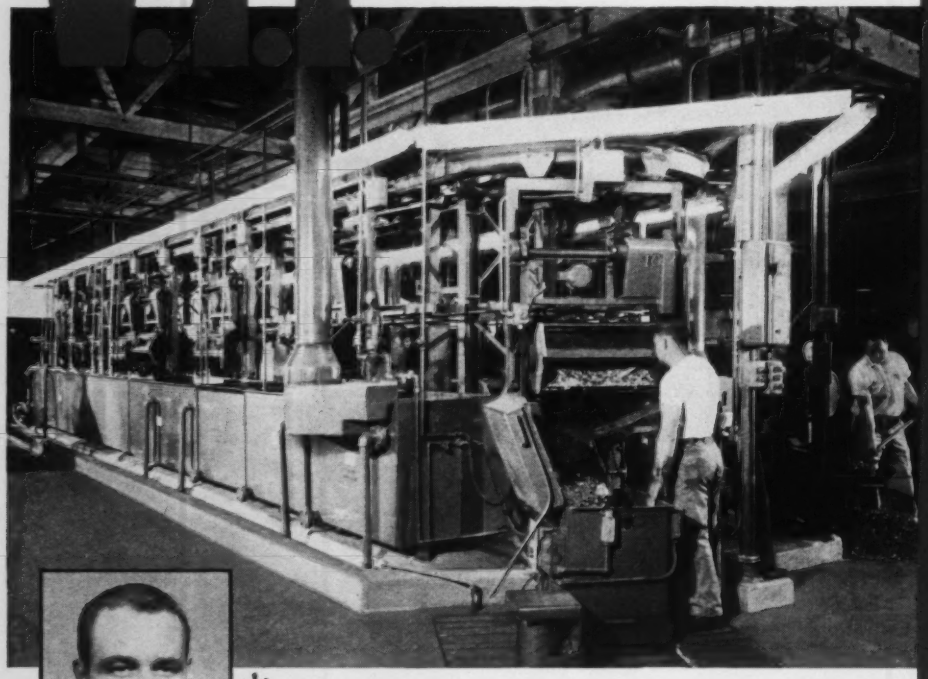

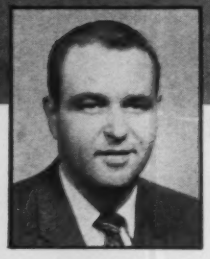

*Variable Integrated Processing steps-up production, improves plating efficiency for Chrome-Rite Company

Chrome-Rite Company, Chicago, Illinois, a large job plating shop, recently selected and installed a Udylite V.I.P. Automatic Barrel Plating Machine to replace a manual line for zinc plating bulk parts.

"We find that our direct labor cost has been cut 60% while the cost of materials has decreased approximately 15%", writes Bill Crawford, Vice President. "In addition, we are now able to handle about 99% of our zinc plating volume on the new V.I.P. and maintain an even more consistent high finish-quality than ever before."

Experienced plating men like Bill Crawford are quick to note the many production plating advantages of the V.I.P. You, too, should consult your Udylite Sales Engineer for complete information on the versatile V.I.P. Call him today. Or, write:

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Tool Bank Idea Gets New Life

Plan Would Send Excess Industry Machines Abroad

A new slant on the old "tool bank" theme is offered by Congressman Frank Kowalski.

Other nations would get surplus tools from a central U. S. depot. Industry and government would supply them.

By R. H. Eshelman

■ It's been a long time since a really new idea came along for disposing of obsolete and surplus machine tools.

One that combines unique approaches to the old problem is offered by Congressman Frank Kowalski (D., Conn.).

While the "tool bank" concept is hardly new, his suggested use for it is original. Government machines declared excess would be gathered. They would then be converted to equip industrially ambitious nations in Africa, South America or Asia.

Fresh Touch—But the idea goes a step further, and this is the fresh touch.

The Congressman also would allow industry (and agriculture) to transfer obsolete or excess machines and equipment to the tool bank. Big question here, of course, is how this could be done.

Other countries would be able to draw on the tool bank under the proposal, without charge for the tools. It's not stated if this would be done by present agencies, such as Commerce and State Depts. and the International Cooperation Administration.

Industry Interested—Spokesmen for the machine tool industry are generally enthusiastic about the aims of such a plan.

Steele Blackall, president of Taft-Peirce Mfg. Co., Inc., and head of a subcommittee of the National Assn. of Machine Tool Builders that deals with such matters, says, "As far as this puts our problems (national and industry) in focus, we're all for it; in fact, we have been discussing these matters with government agencies for some time."

Timing Important — Francis J. Trecker, president of Kearney & Trecker Corp., views the idea in light of the current import-export situation.

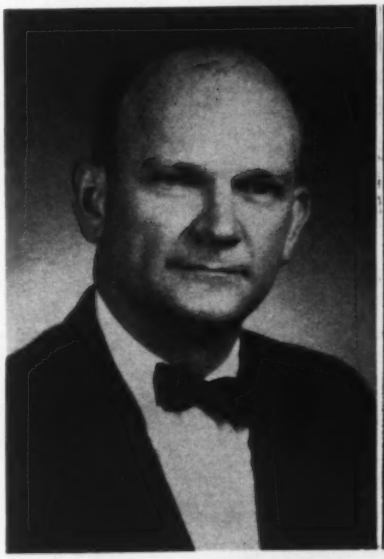
"Timing is very important," he warns. As a result of a recent business trip around the world, he feels American machine builders now have an opportunity to recoup some lost business abroad.

"Many metalworking plants prefer our tools for their production superiority," he points out; "even those that are not the latest models. Our surplus tools can be competitive with standard machines from other countries, including the communist bloc, if rebuilt or renovated and priced realistically."

Further Study—Everett M. Hicks of the Norton Co., president of the NMTBA, says he wants to study the Kowalski tool bank and other proposals carefully, although the aims are quite desirable. He and Mr. Blackall both suggest there are many questions to be answered before such a program is enacted.

Major Problems — Some questions these manufacturers are asking:

Who will administer the program? How will equipment be selected for the bank? How about rebuilding or renovating costs; warehousing facilities?



STEELE BLACKALL: "Puts our problems in focus; we're for it."

F. J. TRECKER: "Our tools preferred abroad for their superiority."

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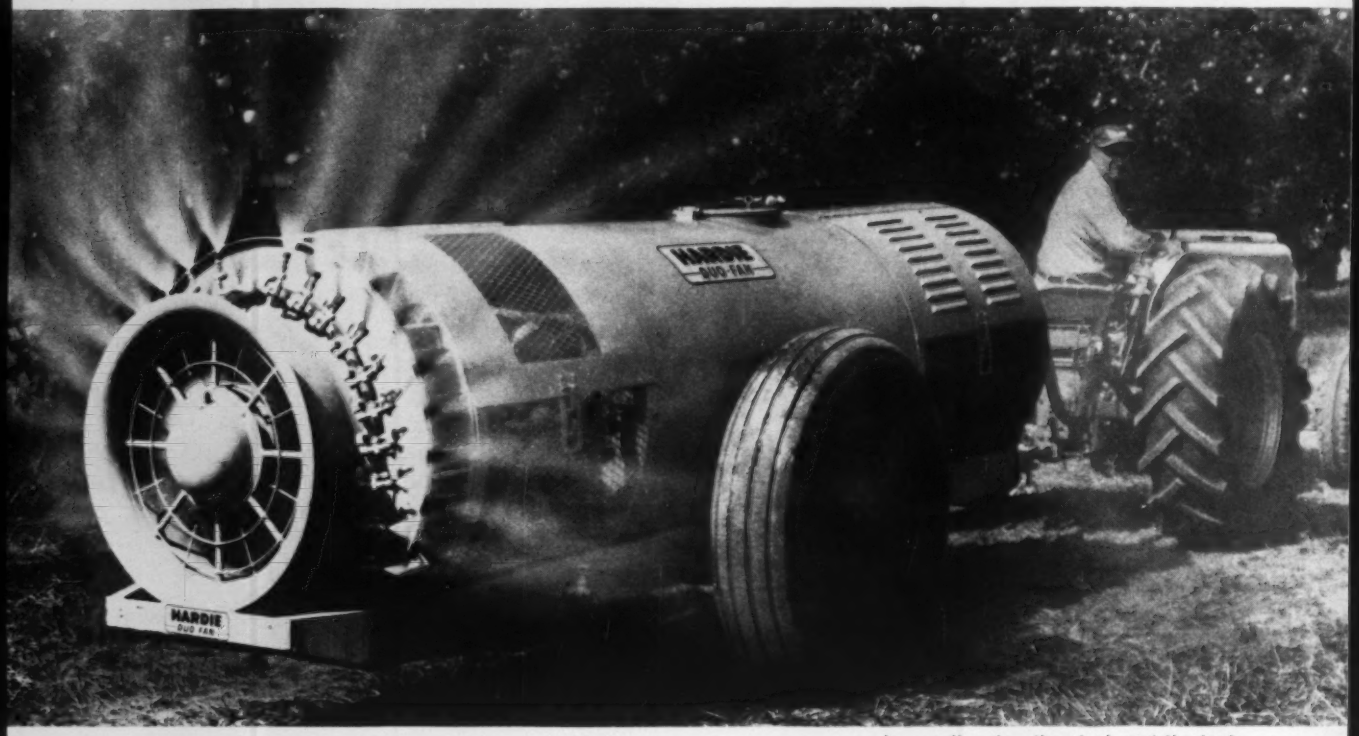
Ingersoll STAINLESS-CLAD STEEL



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4. 20% of the total steel thickness is Ingersoll stainless steel.
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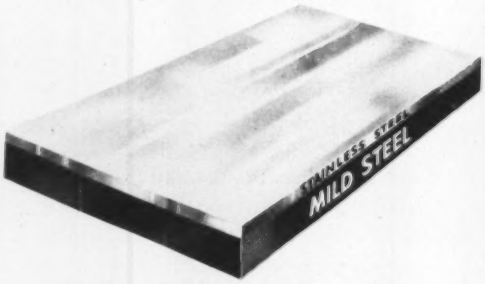

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Ford Motor Co.—**R. F. Williams,** appointed Midwestern regional sales manager, Lincoln-Mercury Div.; Ford Div.—**W. P. Benton,** named manager, car sales promotion and training dept.; **B. F. Scanlon,** appointed national used car manager; **D. A. Holmes,** named fleet merchandising manager; **J. B. Trezise,** named manager, sales statistics and analysis; **R. F. Lewis,** named manager, market representation dept.; **P. W. Czamanske,** named executive assistant, Southeastern regional sales manager.

Bendix Corp.—**C. E. Heitman, Jr.,** elected vice president, Detroit.

Potter & Brumfield Div., American Machine & Foundry Co.—**Z. R. Smith,** named executive vice president and general manager, Princeton, Ind.

Plus Marketing International Corp. — **H. I. Segal,** elected vice president, financing and corporate development, New York.

Plasteel Products Corp.—**J. B. Cowan,** elected president, Washington, Pa.

North American Aviation, Inc. —**M. M. Henry,** appointed assistant to the president, Downey, Calif.

Magna-Bond, Inc. — **Arthur Tuchinsky,** elected president, Bala-Cynwyd, Pa.

Lasco Engineering Co. — **J. T. Lindsay,** named vice president, Tulsa, Okla.

Ingalls Iron Works Co.—**J. B. Kopp,** named executive vice president, Birmingham, Ala.

Arnolt Corp.—**A. N. Kaufman,** named vice president, manufacturing; **H. M. Henderson,** named vice president and general sales manager, Warsaw, Ind.

E. M. Velten, named vice president, production, Beryllium Corp., Reading, Pa.

DeWalt, Inc.—**R. C. Tyo,** elected president, Lancaster, Pa.

United States Steel Corp.—**G. C. Cooper,** named manager, reinforcing bar sales, Cleveland district.

Midvale-Heppenstall Co.—**F. R. Stryke,** elected secretary-treasurer.

Inland Steel Co.—**G. F. Bowler,** named director of budgets.

Hagan Chemicals & Controls, Inc.—**L. M. Faulkner,** named manager, utility sales for the Controls Div., Pittsburgh.

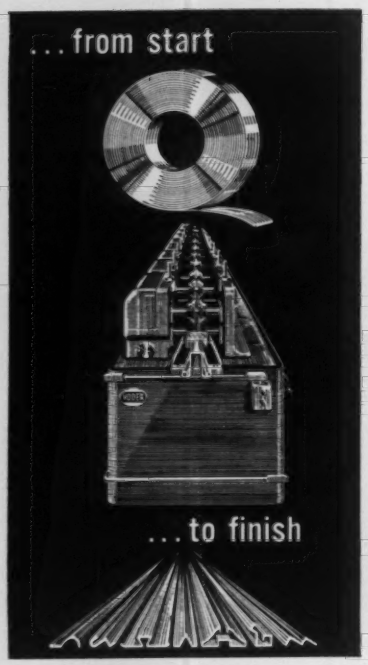
Chromium Mining & Smelting Corp.—**E. T. Johnson,** appointed vice president, operations.

(Continued on P. 70)

I. A. Bailey, elected vice president, International Nickel Co. of Canada, Ltd.

W. T. Brown, named vice president, manufacturing, Philadelphia Gear Corp., King of Prussia, Pa.

H. O. Kron, named vice president, engineering, Philadelphia Gear Corp., King of Prussia, Pa.



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(Continued from P. 69)

Jacob Bros., Inc.—**W. E. Stratford,** appointed vice president.

Harvill Corp. — **L. J. Olson,** named general manager, Femco Div.; **N. F. Singer,** appointed general manager, American Aerophysics Corp.

S. H. Patterson, named vice president, central-mideastern regions, Anaconda American Brass Co., Waterbury, Conn.

Maytag Chicago Co.—**C. J. Flynn,** named assistant to the president.

Colorado Fuel & Iron Corp.—**W. S. Winiarczyk,** appointed general superintendent, Buffalo plant; **H. A. Smith,** appointed superintendent, mechanical dept., Buffalo plant; **H. M. Dorward,** appointed product sales engineer, wire rope sales dept., Western Div.

G. F. Bateson, Jr., appointed manager, Republic Steel Corp. warehouse div., Cleveland.

Rueven Platt, named vice president, marketing, Rolled Steel Corp., Skokie, Ill.

Specialloy, Inc.—**R. C. Stokes,** appointed eastern sales manager, Philadelphia.

ROC Mfg. Co.—**R. H. Wallace,** appointed sales manager, East Orange, N. J.

Nopco Chemical Co.—**F. R. Gagnier,** appointed sales representative, Pacific Northwest.

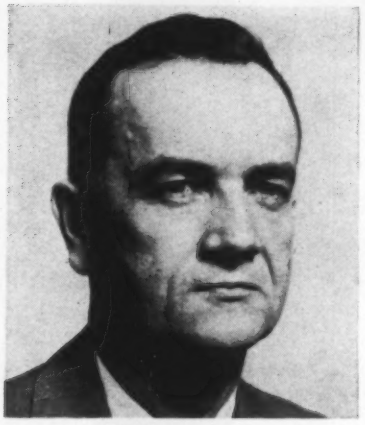
Reserve Mining Co. — **R. M. Bennett** and **R. A. Lee,** appointed assistant controllers, taconite.

A. F. Boucher, named general sales manager, Lincoln Electric Co., Cleveland.

Basic, Inc.—**Cameron Sevier, Jr.,** appointed manager, eastern sales district, King of Prussia, Pa.

Allis-Chalmers Mfg. Co.—**W. R. Call,** appointed manager, Kansas City, Missouri, district.

E. B. Pilcher, named general works manager, National Carbon Co. Div., Union Carbide Corp., Cleveland.



J. F. Galbraith, appointed manager, electric welding development and planning, Linde Co. Div., Union Carbide Corp.

Crucible Steel Co.—**J. G. Gill,** named assistant works manager, operations; **Lawton Howell,** named assistant works manager, services; **R. M. Simpson,** appointed assistant director, sales, Pittsburgh, Pa.

OBITUARIES

J. S. Ervin, 75, director, E. W. Bliss Co.

J. A. Kennedy, 55, field engineer, National Supply Div., Armco Steel Corp.

K. C. Li, 69, chairman, Wah Chang Corp.

M. E. Marsh, assistant vice president, operations, Wheeling Steel Corp.

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Step Up Rocket Research

The U.S. is stepping up the study of rocket motors for space vehicles. NASA has awarded contracts to Convair, Lockheed and North American for studies on future space vehicles beyond the Saturn class. The new rockets are to have a first-stage thrust of 6-12 million lb. The three parallel six-month contracts are another step in finding the best and most economical rockets for future space needs.

Status of Supersteels

Just released is an Air Force report dealing with aircraft and missile steels with tensile strengths above 260,000 psi. The report points up efforts to develop and improve steels with optimum strength and ductility over a wide range of temperatures.

Need a Calibration Lab?

The instrument calibration lab at Hughes Aircraft Co., previously for exclusive use on Air Force equipment, is being opened to private industry. The company is taking this step because of the increasingly stringent standards of accuracy imposed on manufacturers by the demands of the Space Age.

"Light Sandwiches" on Subs

New "sandwiches of light" are playing a key role in the Navy's Polaris submarines. The lights, developed by Westinghouse, are flat sheets of plastic, coated with a special phosphor, sandwiched between two conductive films. When voltage is applied, the phosphor glows. Aboard the atomic subs, many of these panels are used to form a display board that flashes information to the missile control center.

Hot Spots from Liquids

What corrosive effects do the powerful liquid propellants have upon metals? According to Battelle's J. D. Jackson: The stainless steels and aluminum-, copper-, nickel-, and magnesium-base alloys corrode very slightly except when exposed to liquid fluorine containing water. Because liquid oxygen and liquid fluorine react vigorously with any organic contamination to form hot spots, systems using these propellants must be kept exceptionally clean.

Prepare Moon Shots

Plans to explore the moon are "well advanced," top space officials say. Test flights of a vehicle to survive a crash landing on the moon will be held this year. In the next two to three years the U.S. will shoot nearly a dozen moon spacecraft, and five or more probes of Venus and Mars.

Not-So-Rare Earths

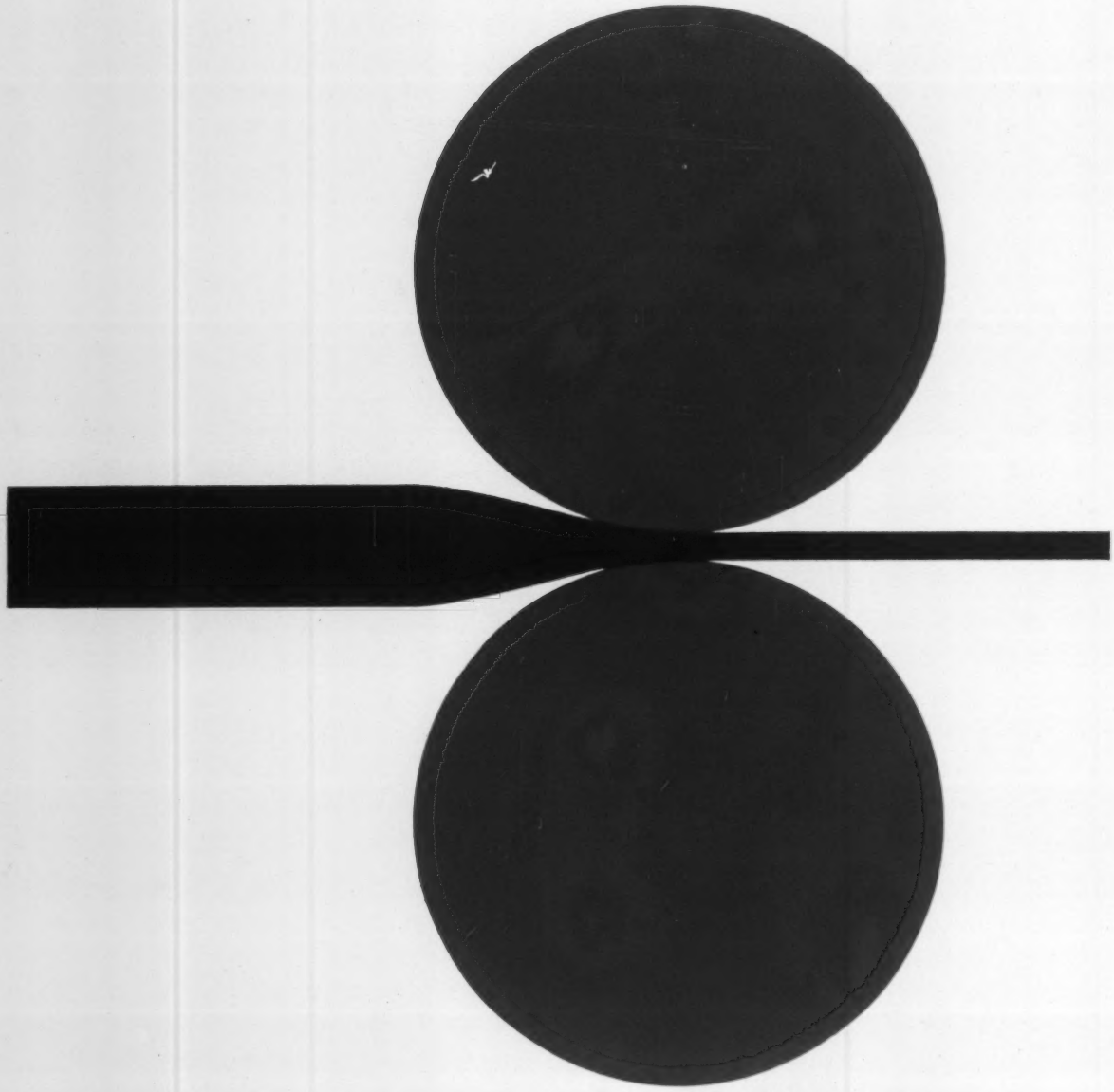
Combining cerium and samarium with sulphur, engineers have learned how to produce materials for use in thermoelectric power generators. One of the key features of the development is the high temperature—2000°F—at which the generator can be used. For Molybdenum Corp. and other producers of rare earths, the development will mean new markets for the no-longer-rare rare earths.

Glass for Rocket Motors

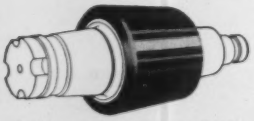
Destined to become standard equipment for space vehicles are fiber glass rocket-motor chambers reinforced with nonwoven glass fibers. Chambers of this type may cost only a fourth as much and be up to three times as strong on a weight basis as metal chambers presently in use. So say Naval Ordnance Lab chemists.

Basis for Space "Firsts"

Advanced missile development is furnishing basic technology that this nation needs to win leadership in space. So report G. M. Bunker, chairman, and W. B. Bergen, president, The Martin Co. Just as development of military aircraft led to rapid commercial aircraft expansion, "we believe that present developments in missiles are a forerunner of the peaceful exploration of space and that today's aerospace activity is only a small fraction of what the future will bring."



Heppenstall rolls it, cuts it, handles it



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How to Retain Skilled Workers

Pre-Employment Investigations Reduce Personnel Turnover

By **C. V. D. Rousseau**—Executive Vice-President, Fidelifax, Inc., Phoenix, Ariz.

As soon as you've trained a man for a complex job, he decides to quit. Why?

He may be a chronic drifter, or he may feel that he's just a round peg in a square hole.

Can this man's actions be predicted in advance?

■ Modern technology requires the average worker to have far more technical knowledge and training than all his ancestors put together. Most of today's complex jobs also hinge on snag-free teamwork.

The process of upgrading employees used to require years of observation and evaluation. Now this process must often be compressed into months.

Also, probationary periods are getting shorter and shorter. At the same time, it's growing more difficult to discharge an unsatisfactory worker.

Match Needs—Hiring the wrong man for today's job can prove a costly mistake. To prevent this, personnel management has improved the selection process to the point where it's a highly refined art—if not yet a true science.

Management has perfected personnel-selection devices to an unprecedented degree. These devices pinpoint an applicant's potential ability. But they don't guarantee how he'll perform on the job.

The only way you can determine this is to learn how he performed in the past. You must, in the words of an industrial psychologist, "determine his behavior patterns."

The best way to do this is by thorough pre-employment investigation, or PEI, as it's often called. When this is done, management realizes huge savings.

Major Problem — Most companies agree that of all economic wastes, excessive turnover is probably the greatest. An effective method of controlling turnover centers on proper employee-selection procedures. Fortunately, this control media isn't costly.

The seeds of turnover are within many employees. These danger signs crop up as a result of many personal, social and economic factors.

Is the applicant a lone wolf or a team worker? If the job calls for one type, and he's the other, it would be foolish to hire him. His psychological test may or may not

Compute Worker Costs

The Merchants and Manufacturers Association lists the following costs for an average worker:

Employment Cost—Advertising, recruitment, testing, supplies, wages and salaries, physical examinations, overhead, etc. **$78.31**

Break-in Cost—Expense of substandard production of new employees while learning their job assignments and becoming adjusted to their working environment. **$305.84**

Breaking-in Cost—The dollar value of time spent by supervisors and other employees who assist in breaking in new employees on their job assignments. **$120.44**

Separation Cost—Processing and exit interviews. **$7.86**

Social Security Tax Costs—Extra tax contributions that must be borne by the employer due to labor turnover. **$17.44**

Lost-Output and Extra-Burden Costs—These costs result from understaffing of plant facilities. **$248.84**

State Unemployment Insurance—Rates increase due to claims and loss of exemption from payment after accrued salary limits. **$10.26**

Total: $788.99

give the right answer. Then, how are we to determine or verify this?

Can a questionnaire, psychological test or interviewer determine if the applicant is an alcoholic? Maybe. But face-to-face interviews with his former co-workers, supervisors or neighbors yield immediate, factual answers to these questions.

Personal Touch — Few persons, if any, will give a straight answer in writing in reply to a written request for such data. Even if they do, the reply is seldom received in time to be of much help.

Such requests always seem to find their way to the bottom of the "in" basket. They stay there until that old guilty feeling finally forces the issue.

Obviously, it isn't impractical for even the largest industrial organization to conduct face-to-face interviews with each job applicant's former associates. However, the company can retain a national network which specializes in personal face-to-face PEI checks.

The cost of this service is reasonable. In fact, this cost pales into insignificance in the light of the savings effected by reduced turnover.

Replacement Costs—For example, according to a recent survey of 136 companies, the cost of replacing an aircraft-assembly worker is estimated at $1000; a dictating-machine operator, $700; a salesman, $6684; and an engineer at $10,000 or more. If these costs seem high, remember that some factors aren't clearly evident.

High turnover also directly affects a plant's personnel accident rate. This, in turn, directly affects production costs.

The famous Kitson and Campbell study indicates that the accident rate of new employees is four times that of the total number of employees. These researchers conclude: "In order to reduce the number of accidents, it's necessary to reduce the turnover. If the number of new employees is reduced to zero, the number of accidents would probably be reduced by 75 pct."

Morale Factor—Rapid turnover also lowers morale in the entire workforce. Low morale produces several major effects. It tends to increase damage to machinery and equipment. It creates a high scrap ratio. And it builds up employee complaints.

More important, a high turnover rate has a very unfavorable effect on the attitudes of remaining employees. The result is a financial loss caused by lessened employee interest and effectiveness.

Workers also assume that better job opportunities must be available elsewhere, or that their present work conditions are substandard. Finally, the most cruel effect of turnover from the efficiency expert's standpoint is the breakup of effective work teams.

Lost Time — Absenteeism is somewhat related to turnover. It creates many of the same problems, but to a lesser degree. One company that reduced its turnover also found that its absence rate declined.

Some executives believe that absenteeism is merely a part-time turnover. Others suggest that it's an index of the turnover which follows. Simply stated, it's the absence of a worker from his job—regardless of the reason.

Dr. Norman Plummer of the New York Telephone Co. contends that only 5 pct of absenteeism is due to on-the-job causes. These causes center on low morale, poor working conditions, poor supervision, etc. The great majority of absences are caused by illness (either preventable or otherwise) or personal factors.

Who's Ill? — Dr. Plummer reports 30 pct of the workers at his company cause 75 pct of all the absences in any given year.

Employees with the highest absences in their first year of service have the highest average yearly absence throughout their entire service periods. This proves there are sickness-prone just as there are absence-prone workers.

Cause and Effect — A General Motors Corp. study shows that four major employee groups account for most non-occupation or non-illness absenteeism. These groups include: Married women with families; young men who haven't developed a sense of job responsibility; financially - independent employees; and young men facing induction into the armed forces.

The conclusions which can be drawn from the foregoing are ob-

Check Yearly Lost-Time Data

Total employees*	**2682**
Total hours of scheduled work	**5,571,741**
Total hours of lost time	**135,793**
Hours of lost time, not paid	**39,964**
Hours of lost time, paid	**95,829**
Lost-time wages, paid	**$129,766.90**
Average lost time per employee:	
Hours	**50.6**
Cost	**$48.38**

*Medium-sized industrial company.

vious. Don't hire sickness-prone workers. Avoid absence-prone or even accident-prone employees.

How do we determine who falls into these categories? Interviews, questionnaires and psychological tests don't fill the bill.

However, PEI checks can yield the answer when the security department's network agent asks: "Was your former employee a chronic absentee?"

Unexpected Costs—What are the costs of absenteeism? Dr. Plummer's report reveals that absenteeism costs his company $10,000,000 annually. A survey of 26 utility companies shows the average direct cost of absenteeism in salaries alone is $56.02 per year for every employee on the payroll.

What are the indirect costs of absences? In the main they are the intangible costs arising from the fact that when an employee is absent someone else has to take his place.

The substitute is seldom as efficient or as careful as the regular employee. This means less work turned out, poorer quality work, more mistakes, and sometimes spoilage or damage. All these factors represent added costs.

Expenses Soar—The amount of these added costs in dollars and cents is hard to gage with any degree of accuracy. For example, how can we measure the cost of a substitute telephone operator, who keeps an important customer or prospect waiting so long that he hangs up in disgust?

How can we check the cost of a substitute inspector who passes a part that should be rejected?

How useful is a substitute workman who jams a machine and interrupts the smooth flow of a production line? What loss results when a substitute clerk misfiles an important letter? How do you gage a workman who damages a machine or ruins material?

Billion-Dollar Loss—There is no way to pinpoint these costs. In one case, an error on the part of a substitute employee may be merely an annoying incident. In another case and under another set of circumstances, the same error may cause the loss of an important customer. This can cost a company thousands of dollars.

With absenteeism representing an expense factor of $56.02 (in cash alone) per employee per year, the total cost to American business on the basis of 60 million employed, is nearly $3½ billion per year.

Establish New Plant—A large aircraft company planned to set up a 1000-employee division in a midwestern city. This city was undergoing a population boom. Most job applicants were new residents. They had little, if any, work experience in the city.

In order to obtain PEI results, the company called on the Fidelifax National Network to conduct out-of-town investigations. During the first year that Fidelifax was responsible for PEI results, the statistics listed in the last table were compiled.

The really significant figures lie in the low-turnover and absenteeism rates. In order to understand these figures, let's analyze a hypothetical company of 1000 employees. First, we must assume that all employees contribute equally to the overall effort.

Costly Training — An average turnover for such a plant is about 4 pct per month or 480 men a year. Thus, we have the following distribution of experience: About 20 pct of the workers have been with the company an average of 3 months; 10 pct have worked in the plant an average of 9 months; and 70 pct have over a year's experience.

Being new, the group that averages 3-month's experience operates at 75 pct of normal capacity. The group with 9-months training operates at 90 pct of capacity. The last group works at the expected capacity.

This adds up to the equivalent of 60 full-time employees who are doing absolutely nothing.

In today's highly competitive economy, PEI offers multifarious advantages. These advantages go far beyond mere convenience. By keeping skilled workers on the job, you produce a better product.

Interview Service Pays Off

Applicant traffic during period*	**19,272**
Total number of applicants interviewed	**13,120**
Total number investigated by Fidelifax	**547**
Total found below employment standards	**137**
Employees hired during period	**410**
Interviewed-vs.-hired ratio	**32:1**
Absenteeism	**1.5 pct**
Turnover (average monthly)	**1.2 pct**
Employees discharged, non-layoff separations	**15**

*In first year of establishing a new 1000-employee plant.

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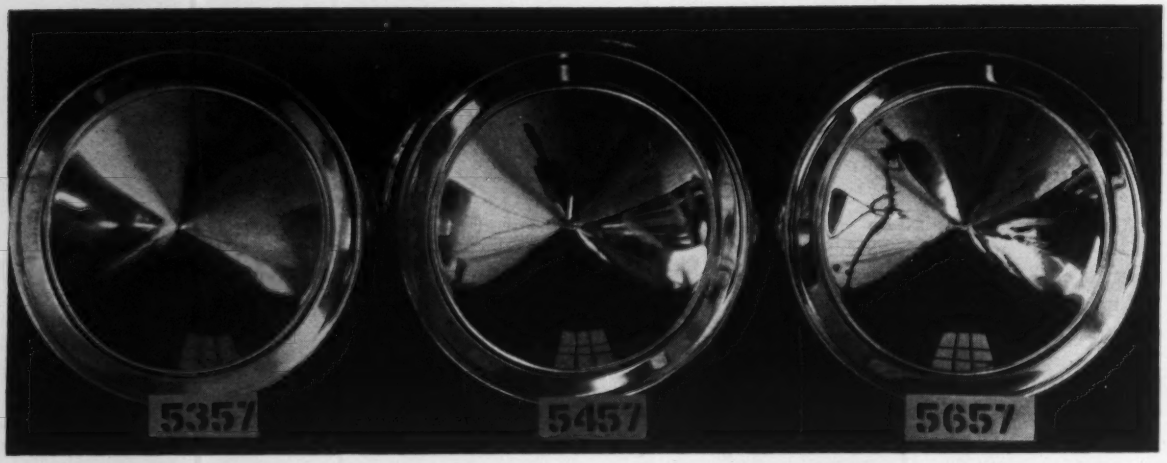


BRIGHTER LUSTER: The superior brightness of the new 5657 material stands out when compared with two other commercial aluminum alloys. These experimental hub caps were all anodized at 0.4 mils.

Improved Aluminum Offers Lifetime Brightness

By **A. L. Moxon,** Ass't. Chief Metallurgist, and **S. B. Wyman,** Finishing Engineer, Reynolds Metals Co., McCook, Ill.

Are you knee-deep in the search for a metallic finish for your end products?

Then look into this bright aluminum alloy. It provides a long-lasting luster to parts.

■ The auto industry's interest in bright anodized aluminum trim has been the impetus for more intense research during the past few years. The demand was for higher reflectance properties plus improved corrosion resistance.

The most recent step forward was taken by a new aluminum alloy that comes very close to meeting these demands. Its brightness is superior to anything now available to the auto industry. It attains more transparent protective film after anodizing.

This alloy will retain its luster even though film thickness is increased. It's actually brighter than present commercial alloys with the same or even twice the protective anodizing.

Brighter Goals — The stress on increased brightness was made by the auto industry about three years ago. That's when improvements in aluminum trim started to make headway. Since then, new alloys and better fabricating and finishing techniques have kept pace with the demands of the industry.

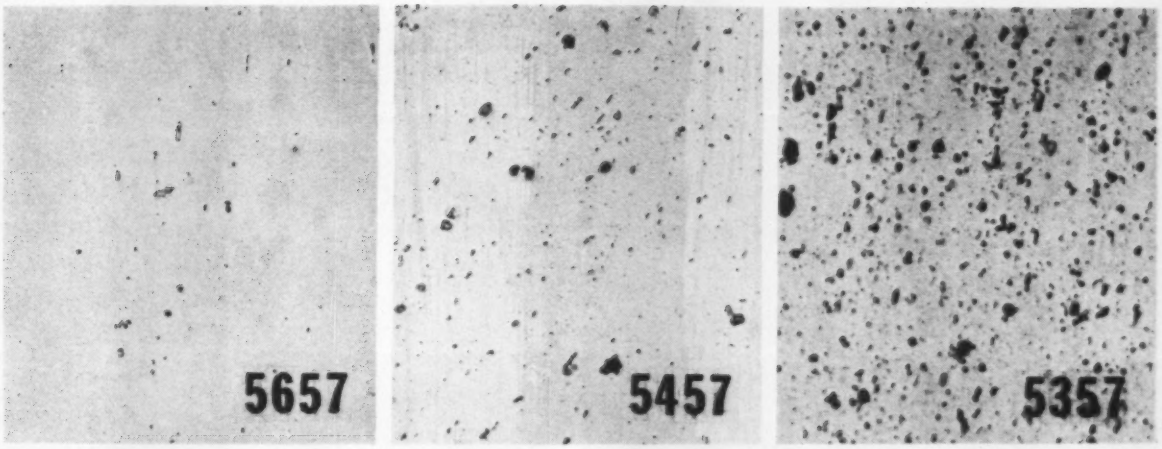
In fact, today aluminum can offer a finished product brighter than chromium plate. It also has the corrosion resistance to retain this brightness for almost the life of the car.

Prior to 1958, only 5357 alloy was available for bright finish jobs. When compared to the industry standard for chromium plate, chemically-brightened and anodized parts made from this alloy were dull and hazy gray. So more effort was put into reducing the impurity level of the material.

Rewards of Research — Alloys with improved reflectance properties soon followed in the form of 5457 and 5557. The effort started to pay off. Finishing traits became brighter. Before long, plant metallurgists learned to control various steps during fabrication to enhance brightness even more.

As these improvements were made, the use of aluminum for decorative trim parts and grilles began to mount.

Yet the auto industry still wanted a better product. It cited a need for heavier anodic coating thicknesses to achieve greater corrosion protection of outside parts. Unfortunately, heavier film thicknesses just meant an unacceptable loss of brightness in the known alloys.



EXCELLENT PROTECTION: Photomicrographs of anodized samples prove that alloy 5657 excels in excluding entrapped particles and voids. By allowing a more transparent protective film, it increases brightness.

New Aluminum Alloy—Back to alloy development went the aluminum metallurgists. It was then that the new material, called 5657 alloy, was introduced to the industry by Reynolds Metals Co., Richmond, Va.

Of course, a big feature of the new alloy is its ability to attain such a high degree of reflectance. This is done with a metal base purity no higher than conventional alloys. It loses none of the strength and forming traits that are also found in established alloys.

To sum up, it means that 5657 aluminum can furnish the finishes that are commonly obtained only with ultrahigh-purity base alloys at no extra cost. That's why the mass-production industries are expressing so much interest in the alloy.

Wintertime Corrosion — Automakers can now get a higher luster quality knowing that the aluminum will withstand the wintertime corrosion of our salt-infested streets. Although the alloy was earmarked for the auto industry, it holds promise for many industries in the decorative and trim fields.

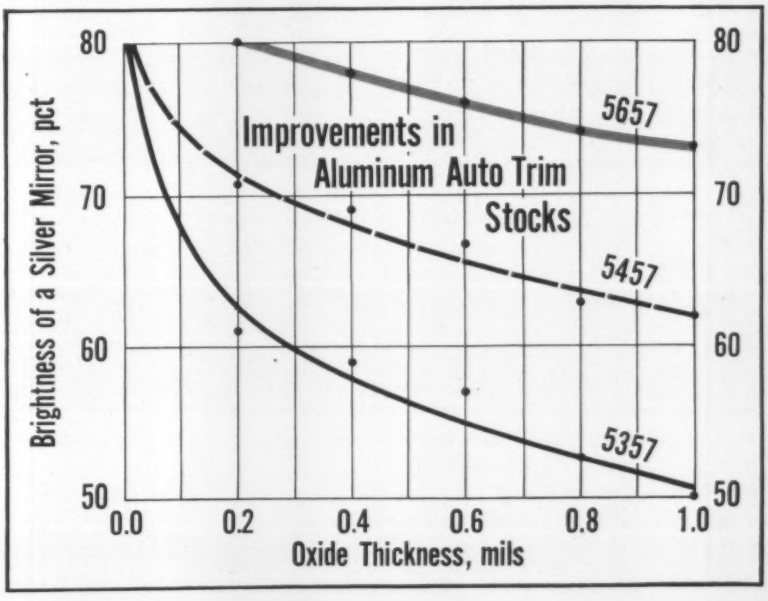
How is this brightness enhanced? How is it retained? Several factors are involved. First of all, the impurities in the alloy itself are under complete control. Those elements that would tend to destroy brightness as anodic coating thickness is increased are excluded.

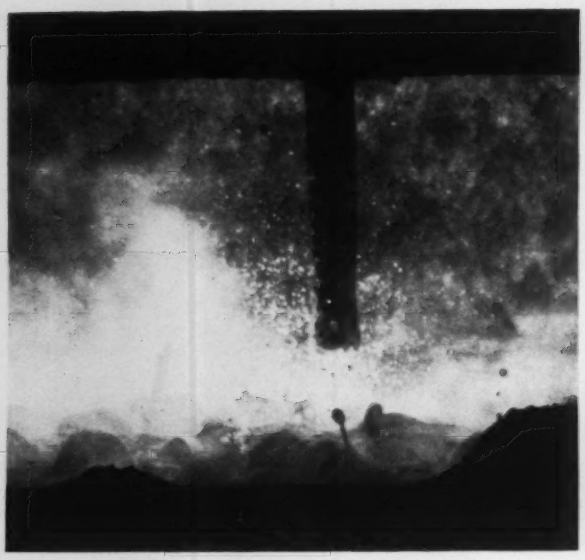
Special control is exerted over the processing variables, too. This controls tends to get the best brightening response of the metal. Conventional control of finishing and sealing practices brings out the inherent brightness of the metal while giving it top corrosion resistance.

Competitive Prices—At present, no other published alloy can match the brightness of 5657 other than costly super-purity aluminum base systems. Then again, no other published alloy retains its brightness quite as well when the protective anodic film thickness is increased.

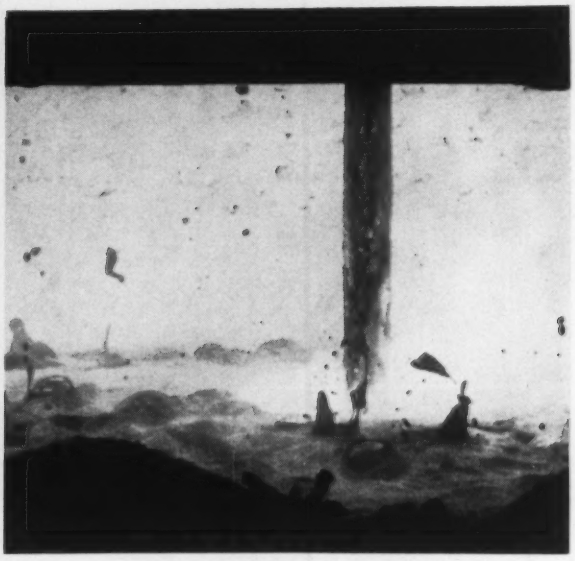
Automakers have been looking at the new alloy with interest. Grilles made from 5657 have proved brighter than any seen since the days of chromium-plated grilles. Experiments are also being carried out on hub caps and wheel covers.

Alloy Retains Bright Finish





HIGH CARBON LEVEL: At 1.5-2.0 pct carbon levels, the furnace activity increases a great deal. Snowstorm effect is caused by extra thermal reactions.



THROUGH THE FURNACE DOOR: Picture taken through furnace door opposite oxygen lance shows that eruptions are evenly distributed in bath.

Infrared Film Helps Design A Better Oxygen Lance

Have you ever considered infrared photography as a metalworking tool?

If you have a problem involving heat, infrared film might put the finger on some trouble spots.

▪ Past improvements in oxygen roof lancing have been based on theory. Many of these theories are conflicting, though. To get to the heart of the matter, you must somehow see what goes on inside the furnace itself.

The actual lance operation is obscured by flame, fume and slag droplets. A realistic approach can be made through film. Conventional film, however, doesn't record enough visual data to be worthwhile. Infrared film, on the other hand, gives a true record of the lance's performance.

Infrared film proved its effectiveness in a trouble-shooting role at HIB Engineering, Inc., Gary, Ind., where it helped solve a problem in erosion. The company had good reason to think in terms of infrared film in the first place.

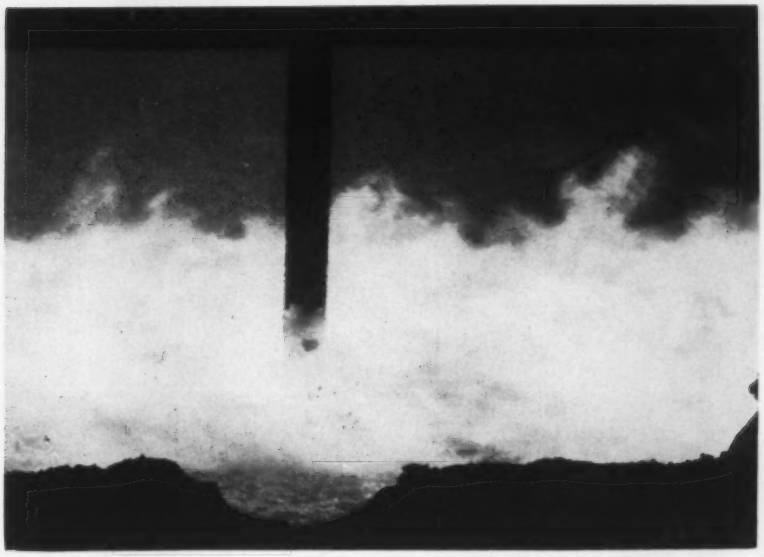
Thermal Suspect—The engineers had a theory. They suspected a thermal pattern growing out of the combined presence of both oxygen gas and slag temperatures. The former enters the furnace at about 60°-70°F, while the slag heats climb up over 3000°F.

In piecing together the clues which led to a better lance, HIB Engineering used standard 4 x 5 in., cut, infrared sensitive film. The camera was equipped with a focal plane shutter. The film is a product of Eastman Kodak Co., Rochester, N. Y.

According to F. M. Hurley, vice president of HIB Engineering, Inc., "We have found that one infrared picture leads to another giving new and novel applications. And we feel that pictures are the fastest and truest method to gain the concept that is necessary for this new steelmaking technique."

Valuable Results—Before experimenting with the film, the company had very little information to work with. Nevertheless, the results were surprisingly good. The stage in the heat cycle was determined that was the most erosive to the lance case.

There had been many conflicting theories regarding the position of the lance. Should it be held inside or over the bath? What velocities are needed to insure optimum oxygen efficiency? The film didn't come up with all these answers, but it did



EROSION SETS IN: When the bath operates at low carbon levels, hot spots begin to appear on the lance case. Erosion then takes over.

confirm many theories.

As far as oxygen efficiency is concerned, it was definitely learned that the controlling factor is actually slag viscosity.

Why Did They Vary? — HIB Engineering's former L-1000 lance had a few shortcomings. One of the puzzles was its service life. Some lances had a service life of up to 309 heats, while others only lasted about 30 heats. Key to this variance was found by the film in the thermal patterns.

As the heats went flat, slag temperatures increased. Also, the distance from the slag face to the jet head became very critical. The new lance, Series L-3000, has taken care of this limitation in design.

The new lance now gives 30 pct additional service life over the former solid nose design. The original jet head design gave good performance, but it was too erratic.

Tonal Clues—The film showed the thermal patterns through contrasting tones. The very light tones caught the high temperatures. The deeper tones recorded low temperatures.

The reason for some early failures in the old style lance is shown in the first print. Note the light-toned area in the shape of a cone just below the jet head. This is the thermal cone. It can only be spotted by the infrared film. The cone is the product of thermal radiation of the cold oxygen gases in contrast to the hot slag and fume of the cone.

As oxygen moves into the bath, a low pressure area forms just under the head. See how the white, hot slag-metal particles start to focus on the jet head itself. This is caused by a splash, created by oxygen entry plus low pressure.

At that point, copper, regardless of its thermal conductivity, cannot withstand this type of attack.

Damage From Bullets — Small, white bullets are also visible in this print. They're caused by increased flow rates. These bullets can do a great deal of damage to the front wall. They could even remove the roof. The lance in this photograph is being operated at oxygen flows three times faster than normal. The molten charge has a 1.5-2.0 pct carbon content.

The second print was taken at a time when the molten charge was still at high carbon levels. Here, the lance head is buried in the slag blanket. Such immersion is not erosive to the head of the lance. Trouble can start, however, when floating scrap in the molten bath welds to the lance case. Of course, this can cause leakage.

The carbon-oxygen reactions in the bath are rapid and violent. The massive gas evolution tends to concentrate in large eruptions. By the way, oxygen solubility in a molten charge (at high carbon levels) is very low. The infrared print depicts a circle of hot fume around the lance head.

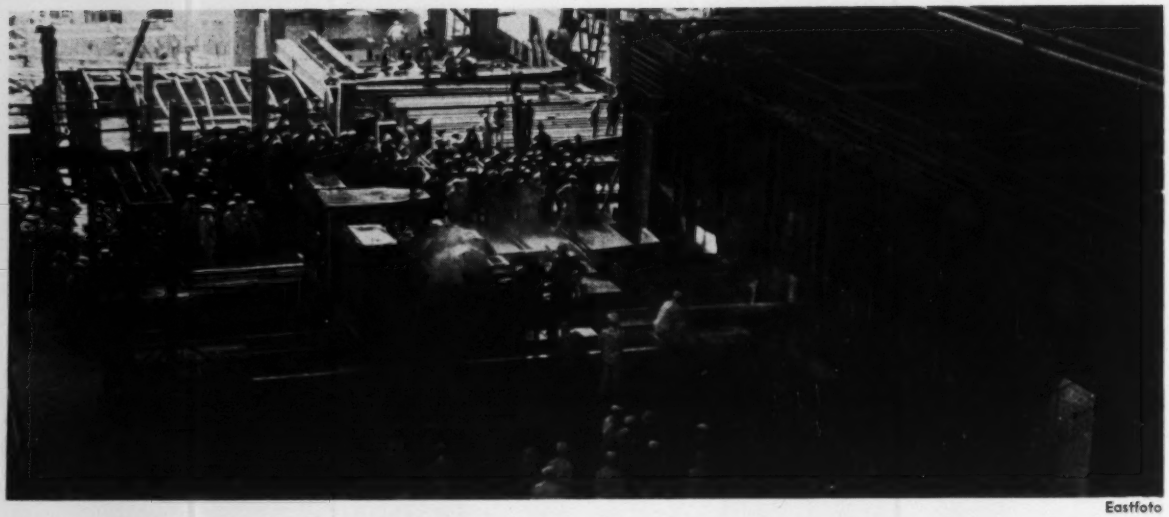
This factor lends credence to the theory that solubility of oxygen decreases when more carbon is added to the charge. When the lance operates at low carbon levels, fume is virtually absent.

On The Move — Also note the slag metal being thrown into the high-speed cross-traveling furnace gases. These eruptions are not concentrated at the lance but are uniformly distributed throughout the bath. It would seem that the smoke problem that accompanies oxygen lance techniques cannot be controlled in the furnace.

The infrared method points the finger to another possibility: Control the fumes later on in the process, using cyclones or precipitators.

The third print shows the molten bath during low carbon levels. The misty effect is caused by the thermal patterns of burning furnace fuels. In the other two pictures, the furnace was being fired from the opposite end. The white patches on the lance case indicate high temperatures. As a result, the lance case is being subjected to a very corrosive portion of the heat cycle.

Gas evolution from the bath is not active. The small bubbles in the bath seem to show that more oxygen is entering the system than is evolving. This could mean that the longer the bath lies quiet (as oxygen enters the system), the more oxidized the bath becomes.



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EIGHT MORE TO COME: This 250-ton openhearth —probably of Soviet design—is one of nine scheduled for one iron and steel works. By 1970, Red China may be third among world's producers of steel.

Is Red Chinese Metallurgy Taking a "Leap Forward"?

"Leap forward" is the name given the second five-year plan for Chinese metallurgy.

Is the "leap" forward or is it dragging its feet?

Technical reports give some clues as to what's going on behind the bamboo curtain.

By **C. L. Kobrin,**
Metallurgical Editor

■ The growth of the iron and steel industry in Red China is moving forward on a wide front. New furnaces and mills, are being installed; steelmaking practices are reported up to European and Japanese standards. And to speed production, a number of innovations have been introduced.

By 1970, Communist China may achieve third place among the world's producers. (Today, they're in seventh place. Capacity: More than 15,000,000 tons.)

Output, however, would still be far behind the U. S. and U. S. S. R. Per-capita steel output would still be behind most other industrialized countries.

Come Up to Par—The new, large, blast furnaces are efficient by world standards, according to K. P. Wang, Far East specialist with the U. S. Bureau of Mines. This is particularly true of those built in the last few years.

Some of these furnaces are rated at more than 2500 tons of pig iron per day—comparable to the best U. S. furnaces. On the minus side, there are still a large number of "backyard" furnaces in China.

The Chinese are learning how to increase furnace capacities. Raising draft temperature and volume, and increasing smelting intensity are the main approaches. Oxygen and self-fluxing sinter are also used by the Chinese blast-furnace operators.

Openhearths Are Large — Most steel produced in Red China is by openhearths. They range from 50-600 tons in size. The largest furnaces are the most recent—and of Soviet design. Rated output is claimed to be more than 1300 tons per day—a good rate for any openhearth.

The Chinese are stressing greater steel output rates. And they're aiming at this goal from all angles. Furnace designs are being altered. Improved refractories extend furnace life. (Eighty percent of the openhearths have basic roofs.) Oxygen use is speeding smelting time. Continuous-casting units are being tested.

The converters used by Chinese steelmakers resemble the turbo-hearths tested by U. S. steel companies in the 1940's, says Dr. Wang. Used mostly in the small steel centers, they account for about 30 pct of the country's total steel output.

Several measures have been taken to increase the efficiency of these low-cost units. According to one

technical report, the Red Chinese are teaming up the converter and the electric furnace for faster production of high-quality steels.

"Boils" the Ingot—Product quality is not overlooked. One technique involves blowing oxygen or compressed air at the top of a solidifying ingot. The boiling action, the Chinese claim, removes a large proportion of the unwanted sulphur, phosphorous and carbon.

Degassing, vacuum melting and casting, ultrasonic vibration are other modern techniques being used to improve steel quality.

Reports are that some progress is being made in rolling and fabrication equipment. This has been one area in which the Chinese have been especially weak.

Build New Capacity—Complete sets of medium and heavy rolling mills with annual capacities up to 800,000 tons are being built. The largest blooming mill being built is a 45-in. unit. It'll have a 3,000,000-ton annual capacity. A 2500-ton hydraulic forging press has also been built for one plant. A 12,000-ton press is in the offing.

The Chinese write of "gigantic achievements" in production rates of steel products. Taking the credit are a number of techniques they've "created."

"Double-bar rolling," "two-way rolling," "multi-sheet rolling," and

THREE AT A TIME: Tapping molten steel via three troughs speeds production, claim the Red Chinese.

Eastfoto

"multi-trough disks" are some of them.

Develop New Alloys—The shortage of nickel and chromium has led Chinese metallurgists to study whether these metals can be replaced in alloy steels.

In recent years, a number of new steel products have been developed. They contain little or no nickel and chromium. Instead, they contain manganese and silicon, two metals in plentiful supply.

High-strength low-alloy steels, for example, use manganese and silicon as the main alloying elements. Some special types of steel in this category also use copper, aluminum and titanium.

The same trend is evident in reports on new heat-resistant steels. The Fe-Al system is being stressed rather than Fe-Cr-Al. And to save chromium, a chromium-coated low-carbon steel has been used for steam turbine blades rather than a high-chromium steel.

Keeping Up the Pace?—How about the nonferrous industries? Are they keeping up with the schedule laid down by the second five-year plan?

"Production of copper, lead, zinc and aluminum has been greatly increased in recent years." So reported Dr. Wang at the recent meeting of the American Assoc. for the Advancement of Science.

"And prospects are that Communist China will become a medium world producer of these metals within five years," Dr. Wang added.

When it comes to tungsten and antimony, Red China ranks as the leading world producer. Tin? China is the second leading producer. China is also a large producer—the fifth ranking—of mercury, bismuth and molybdenum.

Improve Mining Practice—The emphasis on improved mining operations and greater recovery of by-products is evident. Most of the nonferrous literature deals with extractive metallurgy.

Reports are that both tungsten and tin technologies have greatly improved in recent years. Mines have been modernized; mills and smelting facilities have been enlarged and improved; more advanced techniques have been adopted.

In short supply are a number of key metals. The copper situation is drastic. Lead, zinc and aluminum are not as critical. However, some of the provinces, Hupeh and Szechuan, for example, eagerly report "big leaps forward" in production in recent years.

More Modern Plants—Taking a lot of the credit is the transition from "groups of small native plants to small modern plants."

Still, there are only a few modern primary smelters and refineries; the largest is medium-sized by world standards. Unlike the new aluminum plants which are approaching world standards in performance, efficiency of the copper refineries leaves a lot to be desired.

One of the most interesting developments in Chinese metallurgy is the smelting of zinc in the vertical retort. There are eight such units in the world. China has one. Its efficiency is reputed to be comparable to the best.

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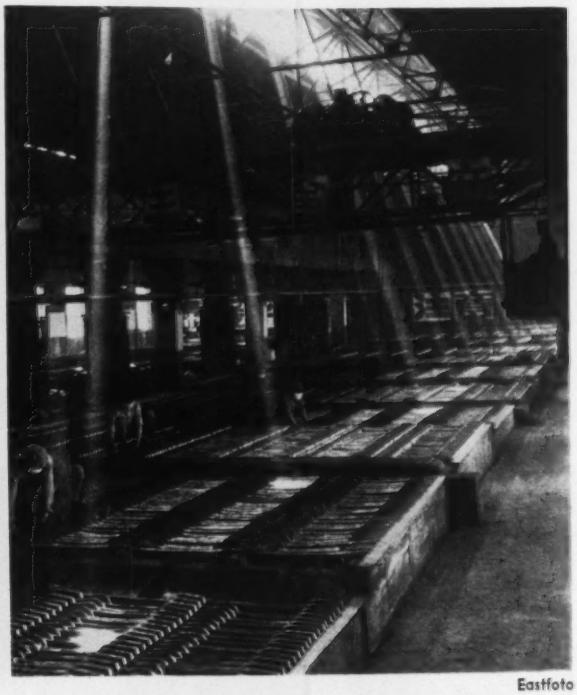
MANY MILL SHAPES: Heavy equipment enables Red Chinese to turn out variety of steel products.



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SHORTAGE EASES: Modernization of copper plants is easing the drastic shortage of this metal in China.

Cast Titanium by New Method

Permanent Molds Increase Yields by Large Margin

If you need the properties titanium offers castings but balk because of supposed mold difficulties, look again.

The Impel method opens the door to low-cost processing.

■ Titanium has recently been introduced to the permanent mold. The result is a new, low-cost method for casting small parts in production quantities.

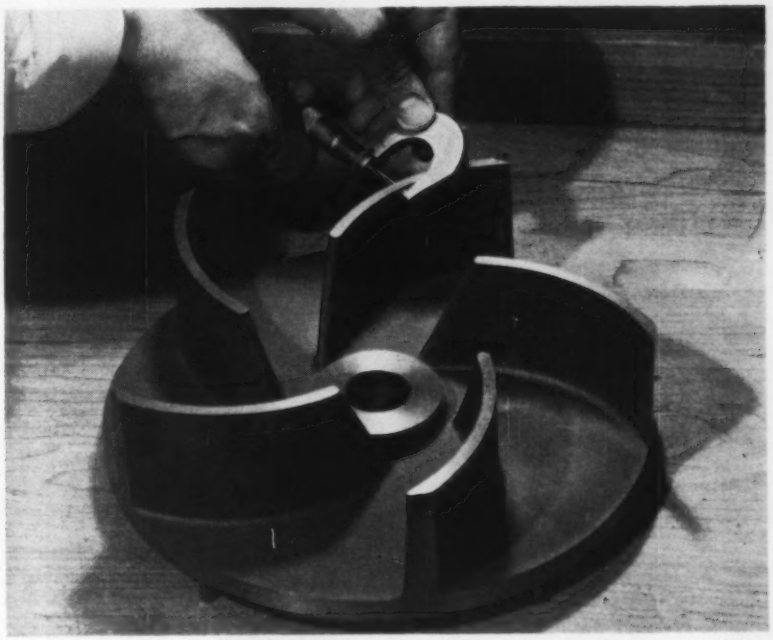
The new method, called Impel casting, ends a two-year research program by the Titanium Metals Corp. of America, New York. The permanent mold promises to reduce mold costs that must be incorporated into the piece price of such parts as pump housings, impellers, valve bodies, fittings and sleeves.

To date, titanium has been cast in graphite molds, with production of parts limited to about 10-12 per die on some occasions, and more often one part per die. Die costs thus have made the price of titanium castings impractical for most applications where castings are normally employed.

Up to now, cast titanium parts have had a negligible effect on the titanium market. TMCA plans to change this condition. To date, the company has produced 40 castings per mold, and believes at least 100 parts per mold are possible.

Costs Come Down — The first commercial order accepted by TMCA, for nine 12-lb impellers, shows that mold costs can be absorbed and shipment completed much more cheaply than titanium welded assemblies.

Present equipment, however, limits production of castings to 12 lb with maximum boundaries of 5 x 10 x 24 in. Commercially pure grades of metal are being cast where corrosion resistance is more important than extremely high strengths.



QUICK CHECK: The parts have a good surface finish and can meet close dimensional tolerances. The castings require little or no machining.

Titanium is virtually immune to corrosion in environments such as wet chlorine, nitric acid, hypochlorites, urea, inhibited sulphuric acid. This strength concession is not as critical as it would appear since great strengths can be developed even in unalloyed grades. For example, yield strengths have been obtained in cast products ranging from 25,000 psi to 100,000 psi depending on the grade used.

Compare Properties—In general, properties obtained have been similar to those achieved in bar products.

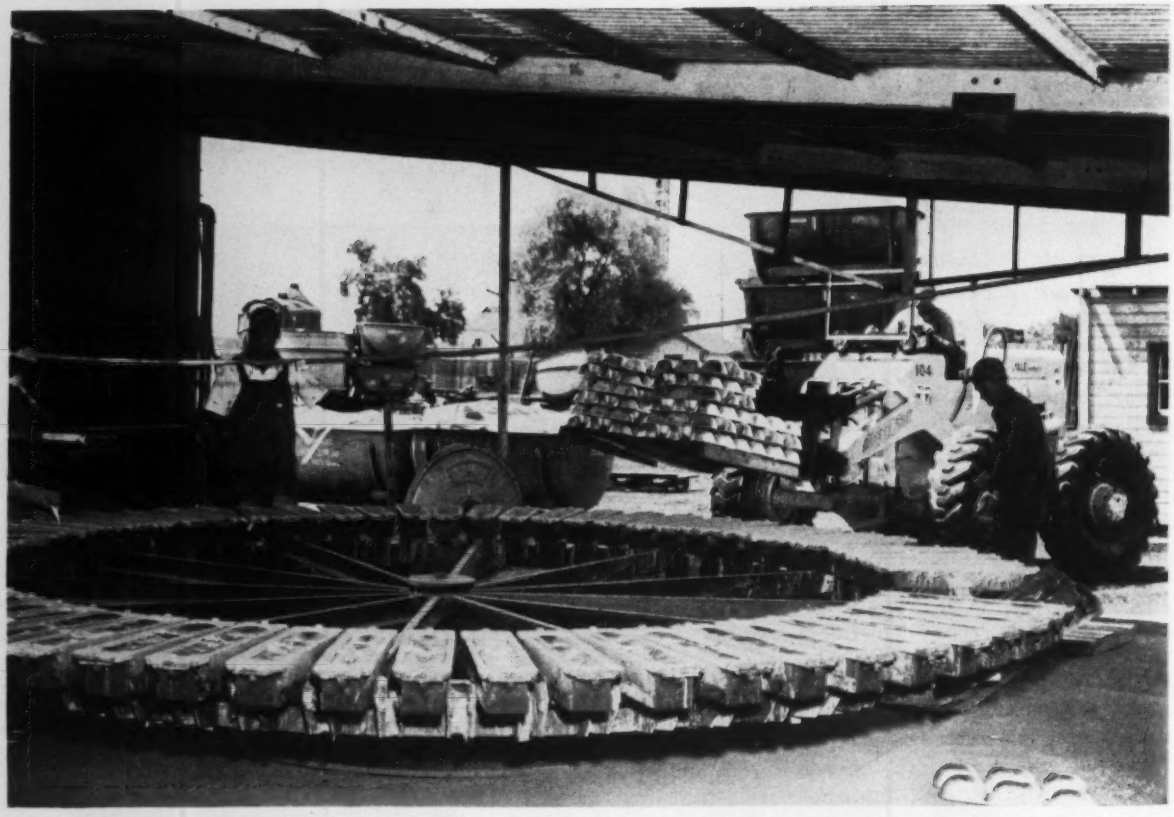
Porosity appears to pose few problems. It's only found in thicknesses greater than ½ in. However, proper die design will help to move the porosity to a non-critical area.

TMCA has yet to encounter surface porosity. The metal's corrosion resistance thus protects where it's needed most.

Proper Technique — The Impel process relies on the excellent fluidity of titanium to produce high strength, accurate, intricate and stable parts. It requires a titanium electrode, double melted, with molten titanium "impelled" into the die cavity.

The shrinkage rate of titanium, 0.005 in/in, makes timing a critical factor in feeding the metal into the die cavity. The cores must be pulled before the titanium freezes.

Core pulling is essential to casting of hollow parts. With titanium, 12-in. cores, about the size pulled from a cast automobile engine block, have been pulled successfully.



FROM WING TO INGOT: The palletized ingots are removed from the turntable and placed in a storage area. Soon they will be on their way to secondary smelters to be processed, this time for peaceful uses.

Lift Truck Speeds Reclamation Of Scrap-Aluminum Aircraft

Nonferrous scrap reclamation has always been a booming and profitable enterprise.

With competition getting keener, more and more technical "know-how" is being applied. It pays, too.

■ What has happened to those once-sleek Army and Navy fighter planes of World War II vintage? They've probably found final rest at the Stockton, Calif., yard of Learner Co., a scrap and salvage specialist.

The yard is widely known as the "airplane graveyard." Here, many of the value-clad fighters, along with other obsolete aircraft, are reduced to trim stacks of aluminum ingots.

The man-made metal birds also shed many other valuable materials. These add up to huge scrap piles of lead, copper, brass and rubber. Technical know-how, along with the proper handling facilities, have helped to reprocess these materials to serve us again—in peaceful endeavors.

Low Bid — Learner buys fuselages, wings and component parts from armed forces installations on a competitive bid basis. The derelicts then are brought in gondola cars to the yard, where cranes stack the parts in giant piles.

The primary metal in this operation is, naturally, aluminum. To reclaim the metal, a very special process is required. It is actually necessary to "sweat" the aluminum from the derelict.

The sweating is done by inserting a plane section into a specially-built 12-ft long furnace which is heated to 1220°F. Melting actually begins at 1200°F. At this point,

the entire aluminum fuselage melts, leaving only the ferrous and other nonferrous parts to fall to the floor of the furnace.

The molten aluminum emerges from the furnace through a spout. The metal then pours directly into molds which are fitted onto a large wheel. The wheel is revolved manually as each mold is filled.

Powerful Tool — The entire "sweating operation" is fully dependent on a Trojan tractor shovel. The unit is a well designed product of the Yale & Towne Mfg. Co., New York. This machine feeds whole airplane sections into the sweating furnace.

For this operation, the standard 1-cu yd bucket of the tractor shovel is replaced with a fork-lift attachment. The airplane sections are tied by wire to the forks, and extend directly to the front of the machine.

The average length of these sections is 23 ft and weighs between 3000 and 3500 lb. The tractor's long wheel base enables the user to efficiently handle these cumbersome loads.

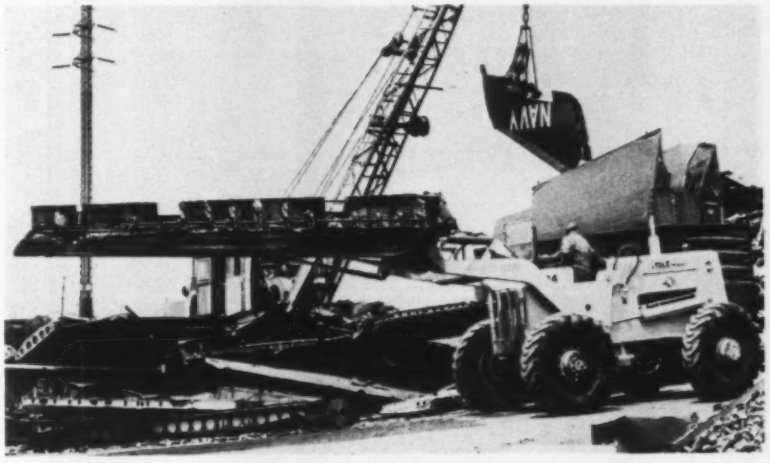
After most of the aluminum has melted, a rake attachment, 18-ft long, replaces the forks. The rake agitates the remaining residues in the furnace, so that all possible aluminum attachments will be removed.

Removes Contaminants — Once the shakeout is completed, the iron, copper, brass and lead are removed from the furnace by means of a shovel attachment. The tractor's hydraulically-operated arms permit smaller materials to be loaded into skips where they are then fed into the furnace.

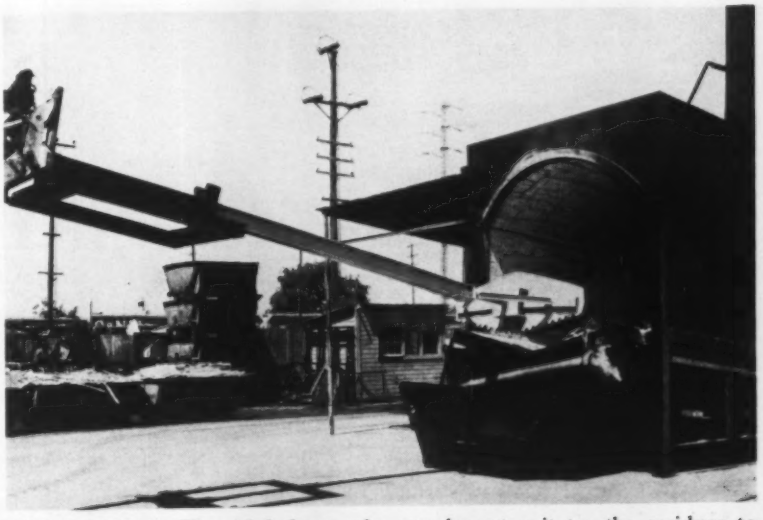
Finally, the tractor removes the palletized aluminum ingots and loads them into railroad cars and trucks for shipment.

All reclaimed metals are disposed of in many markets. The aluminum ingots are sold to secondary smelters throughout the United States and Canada. Thus, the metal is returned to use as kitchenware, automobile pistons, awnings and countless other products.

LONG WHEEL BASE: The tractor easily balances the 3500-lb airplane fuselage as it disappears into the aluminum-sweating furnace.



LAST TRIP: A wing section of a navy plane takes its last trip on the forks of a tractor shovel. The wing section is held in place with wire.



SHAKEDOWN: The 18-ft long rake attachment agitates the residues to make sure that all possible aluminum is removed from the derelict.

Dust Conditioner Aids Handling

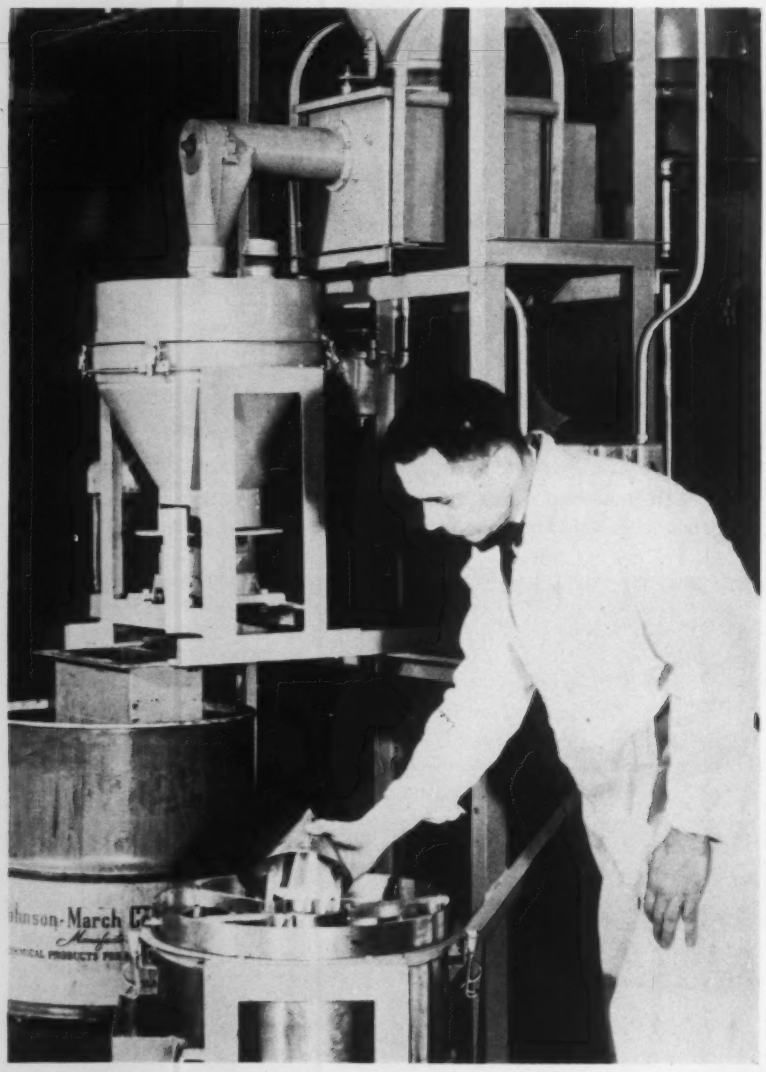
Some plants collect tons of dust per day during normal metalworking operations.

Here's a unit that automatically treats the material and renders it dust free for further handling.

■ Blast furnace flue dust and sinter fines often present a disposal problem. As an aid to such problems, a new bulk-material conditioner has been developed by the Johnson-March Corp., Philadelphia.

The material conditioner, called Verticone, makes loading and unloading from bins, ships, trucks, rail cars and especially collector bins dust free.

The new unit suppresses the dust by adding a controlled amount of moisture to the waste as it's shipped from collection areas. This eliminates the need for reducing the dust matter into slurry form.



DAMPENS DUST: The key to effective dust conditioning is the liquid coverage of all particles. The unit will treat up to 1400 lb per hour.

Controlled Wetting—The key to effective conditioning is controlled wetting of all the surfaces of each particle with a powerful wetting agent called Compound MR. Controlled wetting by the Verticone adds as little as 1 pct of moisture. This may be adjusted to apply any desired amount of moisture.

Rapid conditioning is obtained by proper dispersion of the solid stream of material. This is done by introducing the material onto a distributing cone at the top of the unit.

The material falls over the cone, leaving the base of the cone in the form of a thin-walled, hollow cylinder. The material's wall thickness is held between ¼-⅜ in.

Applies Solution — A spray jet inside the hollow dust cylinder applies the solution to the surfaces of the solids. As this happens, the solids are properly conditioned and rendered dust free.

Internal scraper blades keep the sides of the unit clean at all times, preventing any buildup of materials. The treated materials drop onto a retention plate at the base of the Verticone where final and complete dispersion of the moisture takes place.

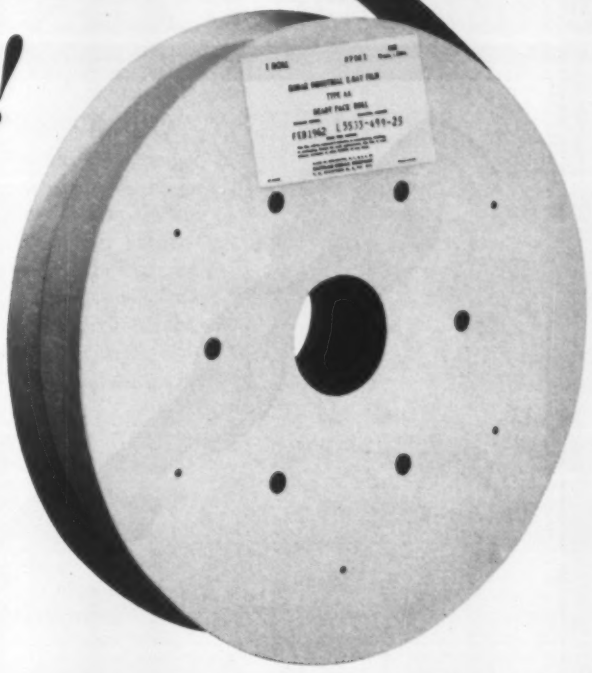
A rotary table feeder discharges the material flow to fit the handling system. The material can be removed by a conveyor or chute.

Less Weight — The treated dust will not interfere with other materials handling equipment. The reason is that such small amounts of moisture are added to the dust.

Where incoming material temperature exceeds 250°F, rapid wetting is achieved by the generated steam. Only plain water is applied through the spray jet under these circumstances.

NOW!

READY PACK IN ROLLS...

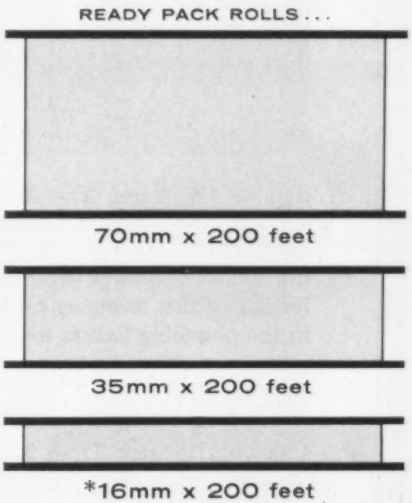


Kodak Industrial X-ray Film, Type AA and Type M in 16mm, 35mm and 70mm widths, 200-foot lengths

Here is America's preferred Industrial X-ray Film in a new convenient form—in 200-foot rolls, and in three widths. Ready Pack rolls are the answer for panoramic or moving slit methods of radiography of thin-wall vessels and pipe, honeycomb, circumferential welds, etc. Unroll the needed film, cut it off, seal the ends with opaque, pressure-sensitive tape. You are ready to inspect aluminum or magnesium alloys, thin steels or anything where lead screens are not required.

Ready Pack rolls are supplied on cardboard cores, 12 inches in diameter. The film is enclosed in a light-tight wrap-around sealed covering, without interleaving paper. It keeps clean and does away with darkroom loading. For processing, just separate the wrap along the sealed edge and remove the film.

For further information or to order a supply, contact your x-ray dealer or write us for a Kodak Technical Representative to call.

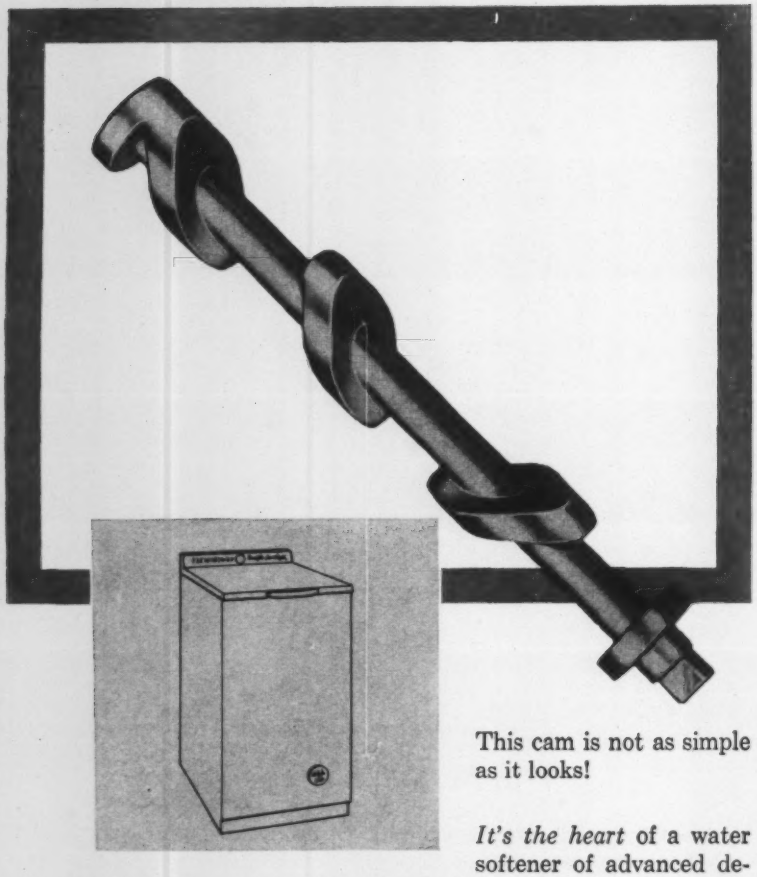


*For the present this size available only on a special order basis.

EASTMAN KODAK COMPANY
X-ray Sales Division, Rochester 4, N.Y.

Kodak
TRADEMARK

LOOK what brass is doing now!



This cam is not as simple as it looks!

It's the heart of a water softener of advanced design for home use. The three projections around this Titan brass forging are a combination of six different angles from the center line of the piece. This design requires the skill of Titan die makers and forge pressmen. The closer tolerances of Titan forging in this reversing cam mechanism spell a big difference in the plumbing fixture where hand-in-glove fit is a must.

Use Titan forged brass parts to solve *your* design problems. Let us help design and quote on your component parts.

Call your nearest Titan Man for detailed data and a brass forging quote. Or send your sample and blueprint to Bellefonte, Pa., or Newark, Calif., for quick service.

Send for 32-page Titan Forging Handbook. Write us on your letterhead.

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NEW PATENTS

Humidifies Blast

Process for treating and humidifying blast for metallurgical furnaces, O. R. Rice (assigned to Koppers Co., Inc.), Feb. 7, 1961. To obtain high blast humidity in an iron blast furnace, hydrogen-enriched gas burns directly in the hot blast. This lets about half the total water vapor in the blast form as a product of combustion. U. S. 2,970,901.

Scrap-Metal Recovery

Process for cleaning and recovering scrap metal from slag, F. E. Rath, Feb. 14, 1961. This is a method for selectively recovering and separating metals from slags obtained in steel producing units such as basic open-hearth, Thomas, Bessemer, duplex, oxygen-blow or electric-steel-melting and refining furnaces or converters. U. S. 2,971,703.

Desulphurs Iron Melts

Process for desulphurizing pig- and cast-iron melts, F. Harders (assigned to Dortmund-Horder Huttenunion A.G., Dortmund, Germany), Jan. 10, 1961. In the desulphurization of carbon-rich pig iron or cast iron melts, the bath is exposed to the influence of a vacuum without the use of any desulphurizing agents. U. S. 2,967,768.

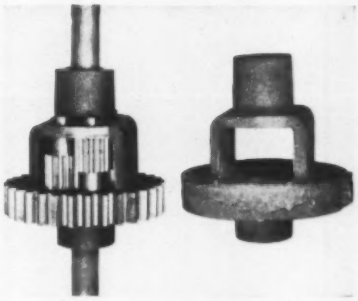
Ferrous Alloy

Ductile iron, A. P. Alexander and A. F. Spengler, Jr. (assigned to International Harvester Co.), Feb. 7, 1961. A soft, ductile, readily-machined ferrous alloy comprises 3-3.7 pct C, 1.8-2.8 pct Si, 0.5-1 pct Mn, 0.1-0.25 pct P, not more than 0.03 pct S, 0.02-0.5 pct Ce or Mg, 0.004-0.02 pct La, and the remainder substantially all Fe. U. S. 2,970,902.

Copies of U. S. Patents are available at 25¢ each from Commissioner of Patents, Washington 25, D. C.

New Materials and Components

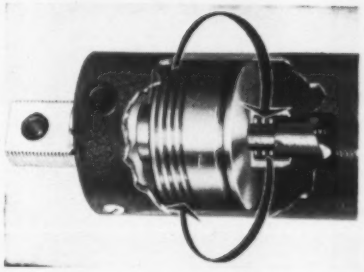
Pearlitic Malleable Machines and Hardens Easily



Pearlitic malleable iron offers distinct cost advantages, especially for machined surfaces that must withstand heavy wear. The secret is a combination of machinability and superior response to selective hardening. A manufacturer used grade 60003 pearlitic malleable for a tractor's main-drive gear. Brinell hardness is in the 197-241 range; but temper-carbon nodules make it as easy to machine as irons in the 160-193 range. Induction hardening is done after the teeth are cut. For this part, simple heat and quench yield a hardness of 55 Rc. (Malleable Founders Society)

For more data circle No. 21 on postcard, p. 95

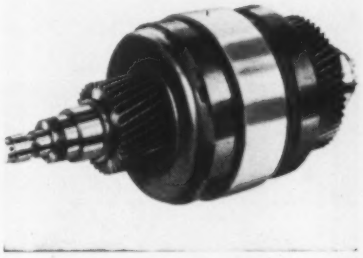
Adjustable Pistons Vary Stroke Length



New cylinders allow adjustment of stock stroke lengths to exact fractional-inch requirements. They use a series of 1/16-in. thick spacing washers to position the piston on the rod. The cylinders come in stock stroke lengths, in increments of 1 in. Here's how adjustments are made. For a 10⅝-in. stroke, order an 11-in. stock length. Then, removing six front-spacing washers and adding the same number of rear washers reduces the stroke length to 10⅝ in. Mountings are not disturbed. (Modernair Corp.)

For more data circle No. 22 on postcard, p. 95

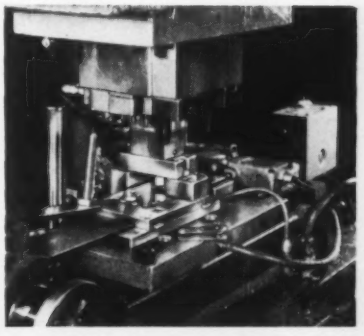
New Hydraulic Clutches Suit Many Transmissions



Power-shift clutches, now available as components, fit a wide range of transmissions and machinery. Each clutch lets manufacturers tailor their equipment to customer needs. Six sizes handle torque loads from 1000-10,000 ft-lb, engines up to 1000 hp and speeds to 5500 rpm. Automatic torque modulation gives end-to-end shifting with smooth, fast engagement. The clutches transmit only enough torque to complete the shift. Then, they continue to maximum capacity. This means longer life for clutch and driveline. They shift and engage in less than 0.6 seconds. Main use is on off-highway equipment. (Rockford Clutch Div., Borg-Warner Corp.)

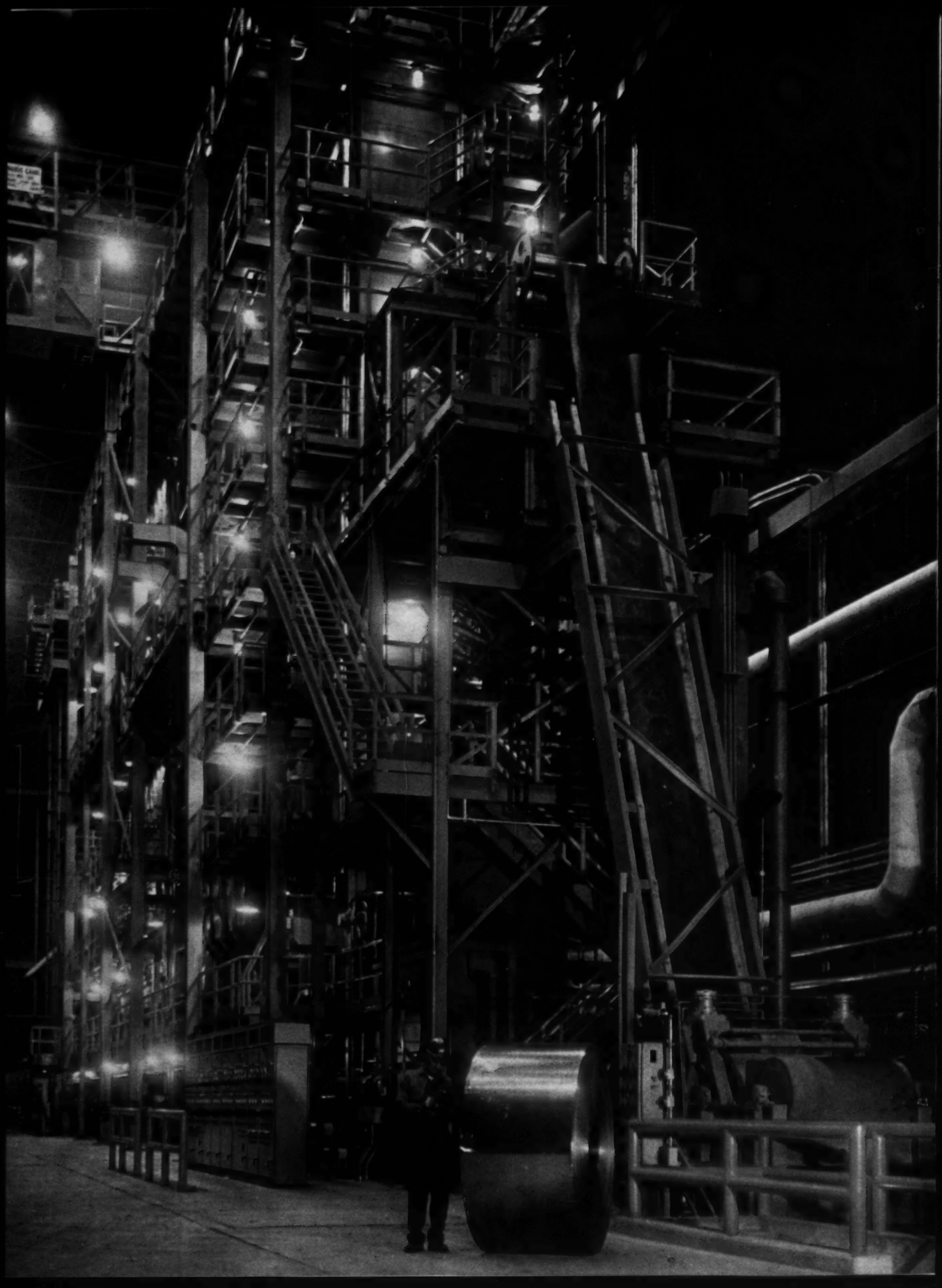
For more data circle No. 23 on postcard, p. 95

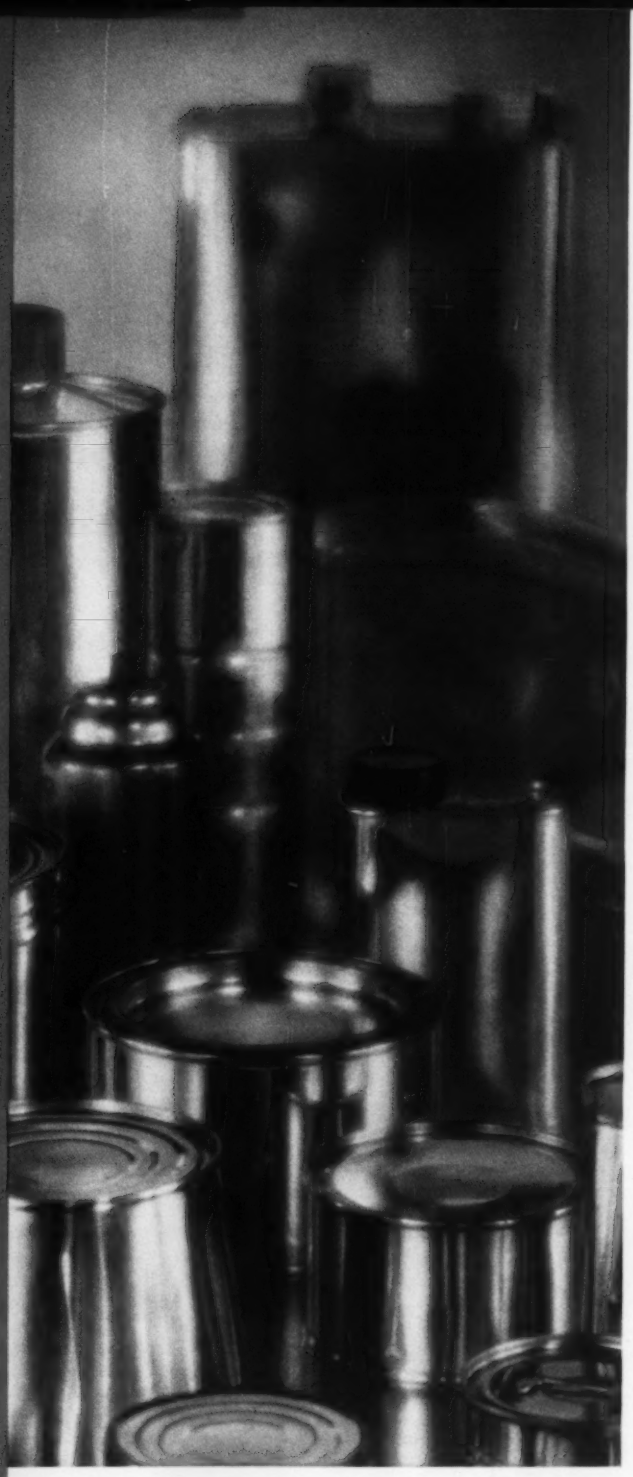
Tapping Unit Fits Dies in any Position



Why not combine such steps as pierce, tap, stamp and cutoff into one operation? A tapping unit, that builds into progressive dies in any position, eliminates extra tapping procedures. In actual production, it strokes 75 times per minute, tapping 4 threads in the work piece. Tap sizes range up to ⅜ in. with a minimum center distance between tap holes of 2½ in. Maximum tap stroke is ⅝ in. Hinged construction permits one-minute tap changes. The mounting alters to suit most die requirements. An important feature is the compact hydraulic unit with motor, solenoid valves and controls made especially for this tapper. (Laughter Corp.)

For more data circle No. 24 on postcard, p. 95





NEW

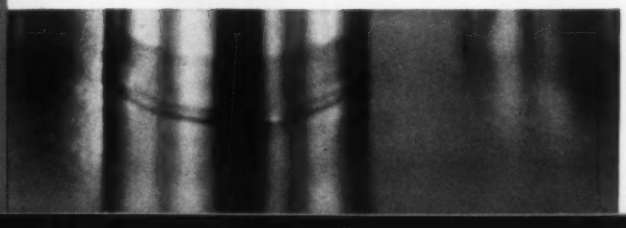
Major mill additions make Youngstown an even better source for higher quality tin plate

New additions to Youngstown's No. 2 Tin Mill at Indiana Harbor include:

- The largest, most modern annealing facilities built to date. Youngstown's new No. 2 Continuous Annealing Line, shown here, has maximum speed of 2000 FPM, producing 60 gleaming tons per hour.
- A new six-stand tandem cold reduction mill —the first, largest and fastest in the world, capable of rolling 7250 FPM of light weight tin plate, in gauges down to .0035. This fantastic speed is nearly 50% faster than that of any mill today.

These major additions to our facilities mean you get more and better tin plate from Youngstown. You get the exact temper and gauge you want . . . fast! And you get the uniform high quality that only an integrated steel-making operation can deliver. For your needs, specify quality tin plate from Youngstown's new facilities.

Youngstown – growing force in steel



For full details on Youngstown tin plate, write to: Department 17-B
The Youngstown Sheet and Tube Company, Youngstown, Ohio

Also rings from: Bearing Bronze, Low Alloys, Magnesium, Zirconium and Copper Base Alloys

we make rings-you save money

Today Amweld is making flash butt-welded rings from nearly a hundred different metal alloys for over a hundred different applications. In each case the customer saves money over the cost of alternative ring making processes. He saves on metal, because Amweld forms rings from stock that is produced to or near finished dimensions. He saves on machining, because the metal is left out—not hogged out.

Amweld customers saved over one million dollars last year. By close cost evaluation of circular components and assemblies, flash welded rings were introduced enabling substantial savings. It doesn't cost you to think on paper with Amweld. Let us quote you for your cost comparison. Write today: The American Welding & Manufacturing Company, 702 Dietz Road, Warren, Ohio.

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INDUSTRIAL PRODUCTS

THE AMERICAN WELDING & MANUFACTURING CO., WARREN, OHIO

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy, just circle the number on the free postcard.

Engine Lathes

An attractive bulletin presents a line of engine lathes. One interesting feature is a description of the turning forces every lathe must withstand to keep its accuracy. It shows how proper design can negate these forces. (R. K. LeBlond Machine Tool Co.)

For free copy circle No. 1 on postcard

Pre-Mixed Grout

Text and photos explain the proper methods for grouting different types of heavy industrial equipment in a 7-page publication. Diagrams and charts show the preparatory steps, forming, selecting materials, mixing and placing the grout. (Masters Building Co.)

For free copy circle No. 2 on postcard

DC MIG Welder

A specification table gives current, capacity and dimensions of a welding machine in a new data sheet. The unit has a range from 10-40 v and performs Metal Inert Gas-Shielded welding. The datasheet lists the welder's features and describes its capabilities. (Chemetron Corp.)

For free copy circle No. 3 on postcard

Industrial Oven

Twin recirculation, a newly perfected oven principle that provides uniform heat from all sides under full load conditions, sharply reduces heat-up time, and eliminates rejects due to faulty heat processing, is explained in a new bulletin. Cross-sectional drawings show how all-around heat penetration of material is achieved, with minimum temperature differential and elimination of heat pockets and stagnant spots. (Ramco Equipment Corp.)

For free copy circle No. 4 on postcard

Vertical Turners

Newly released is a catalog describing a complete line of vertical turners featuring the building-block principle. This means a group of standard components is assembled into the simplest machine for the specific job. The catalog contains specs on the various machines and details on the many available options. (The Motch & Merryweather Machinery Co.)

For free copy circle No. 5 on postcard

Aluminum Bar Stock

A buying and estimating guide for deep-drawn hollow aluminum bar stock, available in all machining alloys is available. Quick-reference tables in the new brochure give weights, pre-calculated clean-up and machining allowances, wall thicknesses, lengths, and mechanical properties. Other sections concern shop-proven advantages of deep-drawn hollow stock over solid bar stock for machining applications. (Harvey Aluminum.)

For free copy circle No. 6 on postcard

Wire Baskets

Woven wire baskets for de-greasing, dipping, heat treating, plating, pickling, ultrasonic or chemical cleaning and quenching are discussed in a new eight page bulletin. It includes illustrations of all standard basket types and detailed specifications on the wire (Newark Wire Cloth Co.)

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Tool-Steel Identifier

A slide-rule guide to tool steels is offered tool steel users. The 6-12-in. item reveals the brand name, producer, AISI number and the donor's

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FREE LITERATURE

equivalent brand at a glance through windows on the rule. It's the most complete listing ever, in such compact form, with over 600 brand names of tool steel. (Universal-Cyclops Steel Corp.)

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Manual Starters

Discussing manual starters for fractional - horsepower motors, a well-written brochure lists special features, ratings and uses for the units. It includes data on their construction and dimensional drawings. (Furnas Electric Co.)

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Drill Sharpener

A 4-page folder thoroughly covers electrolytic sharpening of high-speed-steel drills with a new device. Chief advantage cited is a sharpening rate 3- to 7-times faster than conventional methods without generating heat that alters the drill-metal structure. (Connecticut Special Machine, Inc.)

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Bearings

Self-aligning bearings and rod end bearings are illustrated and described in detail in a new 56-page catalog. Included is a new series of plastic alloy insert, self-lubricated bearings which are available in a variety of plain or rod end types. Bore sizes are now offered up to 6.000 in. Ultimate static loads go up to 4,500,000 lb. (Southwest Products Co.)

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Bearing Indicator

Newly printed catalog page contains illustration, outline drawing, schematic and complete technical details including specifications, component parts and applications of 3-in-1 bearing-distance-heading-indicator. It provides on a single indicator face, information on two relative bearings, distance and magnetic heading. (John Oster Mfg. Co.)

For free copy circle No. 12 on postcard

Grinding Spindles

Detailed information is available on a line of electrolytic grinding spindles. The spindles come in many models for operation between 50 and 3000 amp. Their insulation is built-in, and they have fork-type brush assemblies for cool running. (Pope Machinery Corp.)

For free copy circle No. 13 on postcard

Dust-Control Systems

A preventive technique, that controls dust rather than collecting it, is outlined in a 12-page bulletin. It describes the system which sprays the dust-producing area or material. Therefore, a major part of the potential dust is never created. (Johnson-March Corp.)

For free copy circle No. 14 on postcard

Cold-Header Tools

The addition of many cold-header tools to a standard line of these items is included in a 24-page catalog that describes the line in detail. All the tools are available in a variety of sizes and materials. (Plew Tool Corp.)

For free copy circle No. 15 on postcard

Plastic-Die Steels

Want to know how to match die steels to their jobs? Newly published is a booklet that shows die makers the grade characteristics of a family of alloys useful for plastic molds. It has a table of mold properties and simple heat-treating instructions. These make it easy to select the correct steel. (Vanadium-Alloys Steel Co.)

For free copy circle No. 16 on postcard

Block Insulation

A brochure outlines the properties of refractory insulation. It gives physical and thermal data and shipping information. It also recommends thicknesses for different heats and suggests various uses for the insulation. (Kaiser Aluminum & Chemical Sales, Inc.)

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Atomic Thickness Gage

Describing a new gage, this spec sheet tells how the gage uses beta radiation to check the sheet-material thickness. It includes schematics and illustrations to highlight the process. (The Ohmart Corp.)

For free copy circle No. 18 on postcard

Electronic Switches

This short-form catalog contains photos and data on electronic counting, decoding, distributing and scanning units. Information about a variety of solid - state switches is included. (Burroughs Corp.)

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Stainless Steel is the spotless metal for preparing the food you eat and serve. In protecting the health of your family there is no substitute for clean, corrosion-resistant Stainless Steel.

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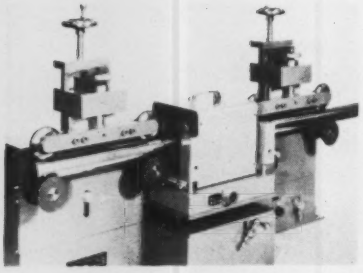
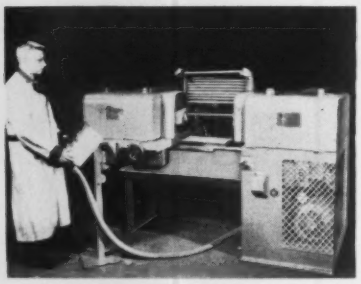
New Equipment and Machinery



Drive Units Feed Tubing and Bar Stock

Eddy-current tests locate defects in ferrous and non-ferrous rod, wire and tube. Designed for use with this through-coil test equipment, new feeders provide the necessary alignment with the coil centerline and constant speed. The coil platform is rigidly supported. Easy access to the coils promotes rapid size changes. A screw and gear arrangement insures precise alignment between coil and test part. Bakelite or steel, power-driven rolls give positive tracking through the coils. (Magnaflux Corp.)

For more data circle No. 31 on postcard, p. 95



Double-End Finishers Face, Chamfer and Deburr

Typical operations on a new double-end finishing machine include inside - outside deburring, chamfering and facing of tube, rod, pipe and similar workpieces. It produces 2400-3000 finished ends per hour, or up to 1500 finished parts. A hydraulic feed mechanism automatically positions the work. You can control each machine function with individual pushbuttons. Quick-change tool holders speed setups; easy feed adjustments help too. Each insert carries a throw-away carbide tool bit. Every bit can be reset to use 12 different working surfaces. (Pines Engineering Co., Inc.)

For more data circle No. 32 on postcard, p. 95

Machine Grinds Square, Eliminates Bell-Mouth

Roll this belt grinder anywhere in the plant, plug it into any outlet, and you're ready to work. It grinds square and without bell-mouth. Use it on hard or soft metals; it works well on either. Change belts from coarse to fine grit for any desired finish. Spare belts are cheap and you can re-use worn belts for the finer finishes. The grinder head tilts up to 5°. An indicating gage shows the angle. Thus, exact tapers can be ground. Here are just a few of the jobs the grinder will do: Round corners, trace, finish or grind a radius. (Industrial Machine & Services, Inc.)

For more data circle No. 33 on postcard, p. 95

Welding System Performs Double Duty

For a pulley-wheel assembly, this system welds the base, spacers and free stems to 0.004-in. diaphragm plates. Then it seam welds a 10-plate tier in pairs. A 30-kva spot welder, tooled with three quick-change electrodes, assembles the individual items. The second machine is a 10-kva unit fitted with supporting mechanisms and tooling. Here's how they work. Three lower electrodes contain either the base, a spacer or the free stem, and the diaphragm plate. A foot switch starts the timer. The head descends and welding current focuses around a projection ring on the work face. On the second machine, a lower electrode wheel seam welds each sandwich of two plates together. (Thomson Electric Welder Co.)

For more data circle No. 34 on postcard, p. 95

Operating two shifts daily, the Super Tumblast at Rockford Screw Products Co. cleans hundreds of thousands of bolts, screws, nuts, washers etc. daily, to remove heat treat scale and provide a uniformly-etched surface for plating.

super tight blast mill handles ¼ inch screw products

A demonstration of WHEELABRATOR'S

VITAL VALUES

Airless blast cleaning equipment has to be "built tight" to handle parts as small as those cleaned in a Wheelabrator Super Tumblast at Rockford Screw Products Co., Rockford, Ill. This blast cleaning machine handles products from ¼-inch to 1 inch in their largest dimension. Thousands of these minute parts are loaded directly into the super tight cleaning chamber, and thoroughly blast cleaned in cycles of only 8 to 9 minutes. The Vital Precision with which all Wheelabrator products are constructed is another reason why thousands of users are making bigger savings through better blast cleaning results and lower cost of cleaning and maintenance. Write today for a copy of Bulletin No. 143-D, "Wheelabrator Handbook of Ideas."

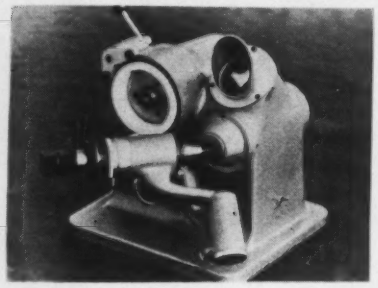
VITAL VALUES FOR INDUSTRY

WHEELABRATOR AIRLESS BLAST EQUIPMENT

WHEELABRATOR CORPORATION, 510 S. Byrkit St., Mishawaka, Indiana. In Canada, WHEELABRATOR CORPORATION OF CANADA, LTD. 1901 Birchmount Rd. P.O. Box 490, Scarborough, Ontario
A subsidiary of Bell Intercontinental Corp.

Sharpens Drills

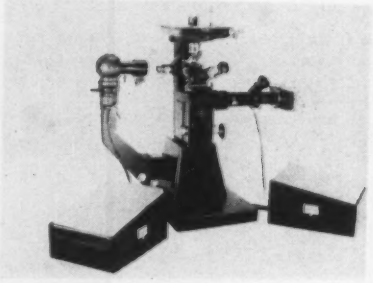
A simple solution to the common chore of keeping small twist drills properly sharpened is offered by an optical drill grinder. This compact bench-type machine holds the drills in a quill equipped with self-centering chuck or collet. After chucking the drill the quill moves until the drill point locates a scratch-proof sapphire stop. Now the sharply-focused image of the drill point appears, greatly magnified, on the large screen. Orientation lines permit instant positioning. The quill indexes 180° for subsequent grinding of the opposite cutting edge. (Eric R. Bachmann Co.)



For more data circle No. 31 on postcard, p. 95

Gages Surface Finish

With a special attachment, a new metallurgical microscope can be used for high-temperature microscopy at heats up to 1800°C. This instrument converts into a micro-

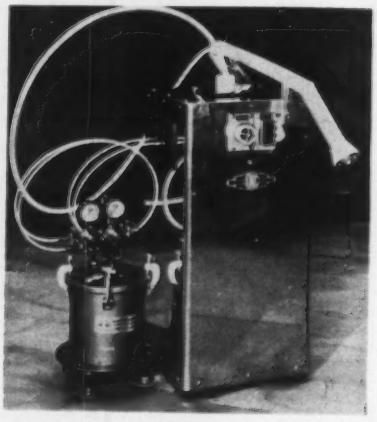


hardness tester or interferometer for measuring surface finishes. Microhardness tests are carried out with the Vickers' diamond or Knopp shape. Load range is 5-100 g. (William J. Hacker & Co.)

For more data circle No. 32 on postcard, p. 95

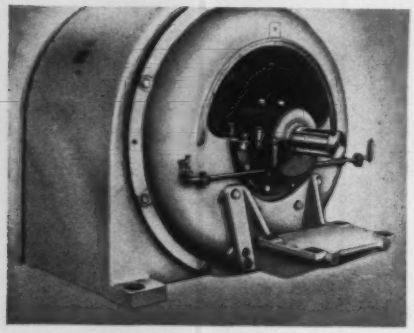
Ionic Hand Gun

This device is a portable electrostatic coating apparatus which paints indoors or outdoors with conductive



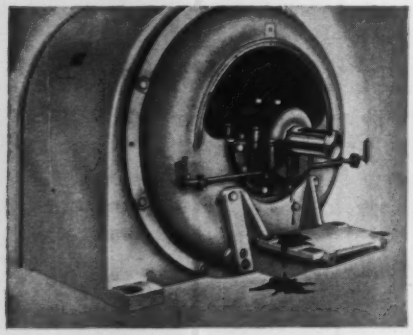
or non-conductive coating materials. It employs a high-speed air turbine that rotates a centrifugal atomizing head at extreme speeds. This pulverizes coating materials into microscopic particles by centrifugal force. Then, a strong electric field ionizes

NON-FLUID OIL
TRADE MARK REGISTERED



NON-FLUID OIL stays in

Ordinary oils leak out



When you use ordinary oils and greases for motor lubrication you will find that they leak at the ends of bearings, creep or throw onto armatures to cause burn-out windings from oil-soaked insulation. NON-FLUID OIL is specifically designed to stay in motor bearings, lubricating efficiently until entirely consumed.

Users of NON-FLUID OIL for ball bearing type motors find that it "stays alive" longer, providing better lubrication at less cost. NON-FLUID OIL cannot pit or discolor the finest polished steel surfaces. Unlike ordinary grease, NON-FLUID OIL does not alter with age, heat or exposure and contains nothing that can decompose or become acid.

The lighter grades of NON-FLUID OIL are ideally suited for use in sleeve-bearing, ring-oiling type motors. It outlasts the highest quality fluid oils, effecting worthwhile savings on both oil and application cost. NON-FLUID OIL does not leak out, causing messy floors and hazardous surroundings. Stoppages are avoided and steady, profitable operations assured.

Write for a free testing sample of NON-FLUID OIL and Bulletin 504.

1896 65 YEARS 1961

NEW YORK & NEW JERSEY LUBRICANT COMPANY
292 MADISON AVE., NEW YORK 17, N. Y.
WORKS: NEWARK, N. J.

WAREHOUSES • ATLANTA, GA. • BIRMINGHAM, ALA. • CHARLOTTE, N. C. • CHICAGO, ILL. • COLUMBUS, GA. • DETROIT, MICH. • GREENSBORO, N. C. • GREENVILLE, S. C. • PROVIDENCE, R. I. • SPRINGFIELD, MASS. • ST. LOUIS, MO. • Also represented in principal industrial centers, including Pittsburgh, Pa., Cleveland and Cincinnati, Ohio

NON-FLUID OIL is not the name of a general class of lubricants but is a specific product of our manufacture. So-called grease imitations of NON-FLUID OIL often prove dangerous and costly.

WANT TO SPEED FORMING OPERATIONS?

You specify the shapes...

ERIE WILL BUILD THE PRESS

When you have unusually shaped parts to position for assembling, forming, forcing, straightening and similar operations, an Erie C-frame hydraulic press may be the all-purpose machine you need. Open on three sides, the C-frame design provides maximum accessibility to the work area. It eliminates the restrictive caging normally caused by support rods or frame castings.

Custom-designed Erie C-frame hydraulic presses can be manufactured to meet unusual requirements. Both horizontal and vertical frame machines have been built for high-speed production in capacities to 500 tons.

Standard Erie C-frame hydraulic presses are also available in a range of sizes, with capacities up to 250 tons.

Erie C-frame hydraulic presses have all steel welded frames to assure a high safety factor with minimum deflection. Power units are built in. Sensitive controls include dual hand and foot levers to provide accurate operation in either direction.

For the complete story, phone or write Mr. Carl Hammon, Erie Foundry Company, Erie 1, Pa. Ask for Bulletin 370.

ERIE

ERIE FOUNDRY COMPANY

ONE OF THE GREAT NAMES IN FORGING SINCE 1895

EF-60-04

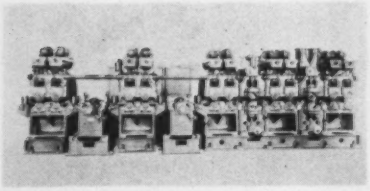
Manufacturers of Forging Hammers • Forging Presses • Hydraulic Presses • Trimming Presses

these particles. This causes them to wrap around objects, coating the side opposite the gun. For example, a bicycle frame can be painted merely by holding the gun on one side of the frame. (Ionic Electrostatic Corp.)

For more data circle No. 33 on postcard, p. 95

One-Pass Bar Miller

For copper bus bars and other non-ferrous bars up to 6-in. wide, a new machine mills all four surfaces in one pass. This avoids using floor space and capital for turn-

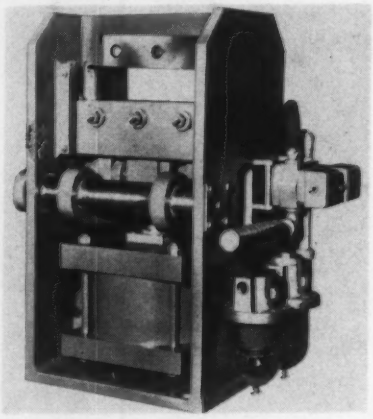


over mechanisms. In addition to milling flat stock in straight lengths, the machine integrates with other units to form a complete production line for both coiled and straight bars. (The Torrington Mfg. Co.)

For more data circle No. 34 on postcard, p. 95

Cutting Shears

Made in widths from 24-84 in., these shears operate with hydraulic pressure or compressed air. They

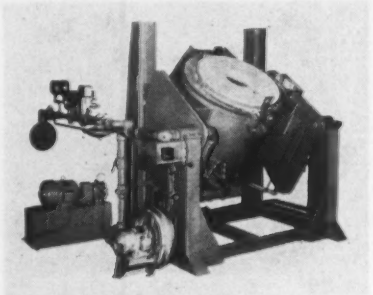


cut up to 3/16- x 96-in. mild steel. The units occupy a minimum of space and fit into processing lines without disrupting other machinery. They're for cropping coil ends, cutting out rejected parts of coils or cutting to length. (Curry Air Shear Corp.)

For more data circle No. 35 on postcard, p. 95

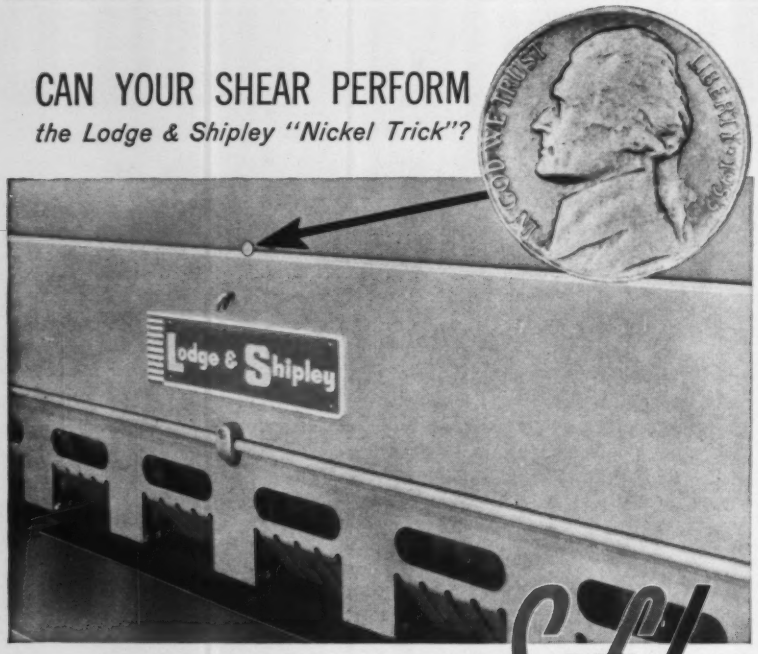
Melting Furnace

The stationary-lip or nose-pour feature of a crucible melting furnace assures a constant pouring arc. This eliminates movement of the ladle during the entire pour. It promotes faster pouring with minimum metal travel between furnace and ladle. It's



available with three types of tilting mechanism. Hoist tilt or powered tilting, either mechanical or hydraulic. Heavy construction means long life. The furnaces handle from

CAN YOUR SHEAR PERFORM
the Lodge & Shipley "Nickel Trick"?



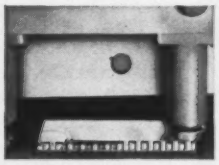
Sof-Loc*

... unequaled holding power, but ... NO IMPACT ... NO MAR ... NO NOISE ... with exclusive ...

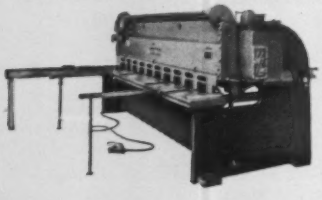
HYDRAULIC HOLDDOWN SYSTEM

So vibration-free a nickel balances easily right above air-hydraulic holddowns applying tons of pressure, that's the Lodge & Shipley Shear feature demonstrated by the "nickel trick". Sof-Loc Holddown gives positive holding power without damage to the most easily marred material.

Available in capacities from 10 gauge to ⅝ inch, Lodge & Shipley Shears are built for heavy duty and high production shearing with almost a score of features vital to economical operation. Almost all of these features are included in the low base price whereas they're "extras" on comparable machines. The many advantages of Lodge & Shipley Shears are described in a new 20-page catalog. Request Bulletin S-347 from The Lodge & Shipley Co., 3073 Colerain Ave., Cincinnati 25, Ohio.



Adjustable for pressure and speed, Sof-Loc Holddowns eliminate impact and damage.



for shear excellence, choose ...

Lodge & Shipley

*PATENTED, TRADEMARK REGISTERED

KEYSTONE WIRE...

long life "backbone" for gasoline hose...

Electric Hose & Rubber Co., Wilmington, Delaware, world's largest hose manufacturer, reinforces their Delmar gasoline pump hose with Keystone Drawn Galvanized MB Spring Wire to prevent kinking and collapse and to resist corrosion. This high quality wire and rayon cord are circularly woven around an inner hose lining . . . automatic horizontal woven hose machines do the job. The outside cover is extruded over the carcass and the final product vulcanized.

Keystone Drawn Galvanized MB Wire with its close diameter tolerance, uniform temper throughout the coil and special zinc coating has been developed to work perfectly in the highly automated machines of Electric Hose & Rubber Co. Regular galvanized wire just won't work.

Just as Keystone Wire Specialists successfully produced this high carbon quality wire that has proved so satisfactory for Electric Hose & Rubber Co., they would like the challenge of developing a wire to improve upon your present wire product. See your Keystone Representative soon; he will be pleased to discuss your wire problems.

Keystone Steel & Wire Company, Peoria, Illinois

KEYSTONE

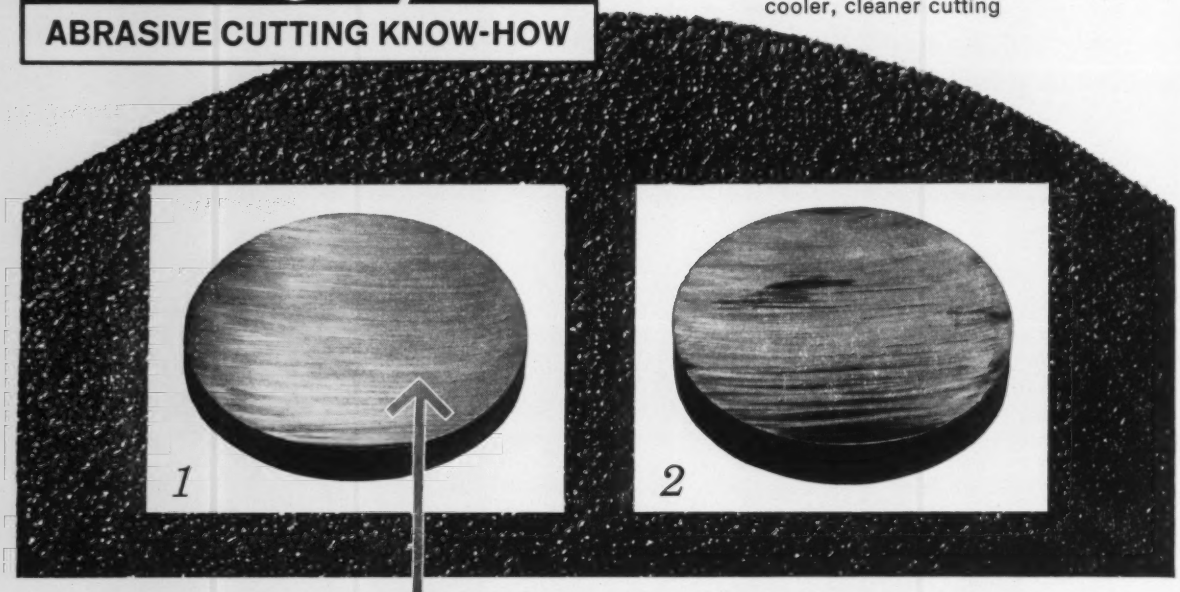
WIRE FOR INDUSTRY

MANUFACTURED AT PEORIA, ILLINOIS, U. S. A.

Allison-Campbell

ABRASIVE CUTTING KNOW-HOW

Close-up view of resinoid wheel shows rough texture that provides cooler, cleaner cutting

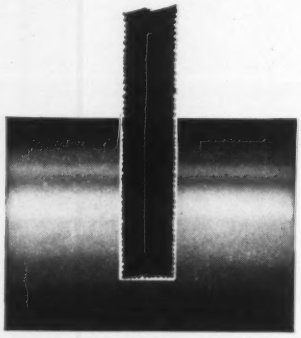


This CLEAN cut was made with a ROUGH-SIDED wheel!

1 • **THE SPECIMEN ON THE LEFT ABOVE** was cut from a 3¾" diameter hardened steel bar in just 28 seconds with an ALLISON *rough-sided* dry abrasive cutting wheel like the one shown in the background. Note that the cut is clean and practically burn-free.

2 • The specimen on the right was cut under the same conditions and with a wheel of the same formulation, but *without* rough sides. The result—the cut took 30 seconds and produced a badly burned surface.

3 • The secret is the extra clearance the rough sides give *inside* the cut (as shown in the small picture at right), and the resulting *cooler* cutting action. This adds to wheel life, too. That's why, for the dry abrasive cutting of solid bars, heavy-wall tubing and structural shapes, ALLISON-CAMPBELL field engineers generally recommend rough-sided wheels.



3 Inside the cut, rough-sided wheels give extra clearance, extra cooling for faster cutting and to prevent burning

For dry cutting of thin-wall tubing with minimum burr, a fine-grit, *smooth-sided* wheel is the choice. And for *wet* abrasive cutting, dozens of ALLISON wheel specifications are available to match the material you are cutting, the quality you require, and the cut-off machine you use.

Regardless of your cut-off problems, your ALLISON-CAMPBELL field engineer can help you choose the wheels that will give the results you want. He is an abrasive cutting specialist—use his know-how.

Write *for* **Bulletin DH-214A** *for details on the complete line of ALLISON wheels*

ACCO

ALLISON ABRASIVE CUTTING WHEELS

Allison-Campbell Division • American Chain & Cable Company, Inc.

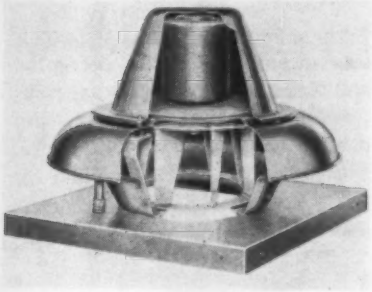
927 Connecticut Avenue, Bridgeport 2, Conn.

125-2000 lb of aluminum. Oil, gas or combination burners fire it. (Warwick Industrial Furnace & Engineering Co.)

For more data circle No. 36 on postcard, p. 95

Roof Ventilators

Direct-drive centrifugal roof ventilators exhaust maximum air volume per minute per horsepower. These new units are made in 8 wheel sizes with capacities from 194-2788 cfm. They're ideal for ventilating exhaust gases and fumes from factories, laboratories and other industrial buildings. (Industrial Div., American Radiator & Standard Corp.)



For more data circle No. 37 on postcard, p. 95

Balance Reels

Used for suspending portable and electric tools on production and assembly lines, a modified series of standard-duty balance reels support loads up to 30 lb. Tapered cable drums provide constant, equalized tension. Each main spring is precision engineered for smooth operation. Secondary safety support is also insured. (Aero-Motive Mfg. Co.)

For more data circle No. 38 on postcard, p. 95

Bores Crankcases

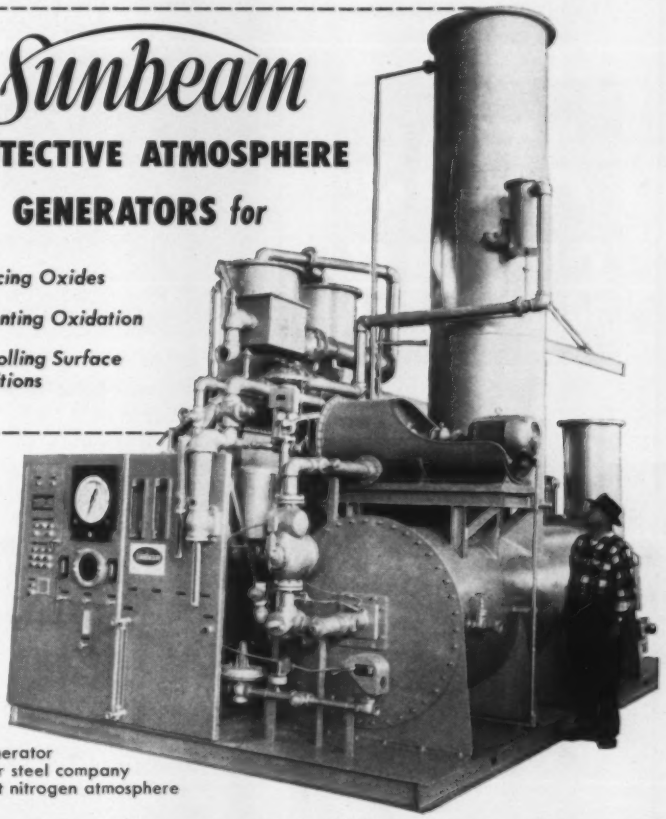
Fixturing on this standard 4-way boring machine accepts two types of die-cast aluminum crankcases. Front and rear slides advance and finish bore and chamfer the opposing cylinder holes. They also finish face the cylinder mounting pads.

Crankshaft-bearing diameters are bored from the left side, to a 0.0003-in. tolerance. Spindles

Sunbeam

PROTECTIVE ATMOSPHERE GENERATORS for

- *Reducing Oxides*
- *Preventing Oxidation*
- *Controlling Surface Conditions*



10,000 CFH
Monogas Generator
used by major steel company
to supply inert nitrogen atmosphere

A type and size for every metal heat processing need

Whatever your protective atmosphere requirements—endothermic, exothermic, monogas, dissociated ammonia or charcoalgas—there is a Sunbeam generator that will process your product dependably and economically. Used with a broad range of metal heat processes—annealing • brazing • soldering • hardening • tempering • carburizing • sintering • normalizing—the Sunbeam line of generating equipment is built to meet specific operating requirements from 100 to 20,000 CFH.

All Sunbeam generators have these things in common. Each generator is factory assembled, piped and wired before shipment to simplify installation at the customer's plant. No shutdowns are required for cleaning. All parts are easily accessible for operation and maintenance.

To help you select the type and size of protective atmosphere generator best suited to your job, write for the name of your nearby Sunbeam representative or ask for bulletin SEC-1.

Sunbeam

the best industrial furnaces made

SUNBEAM EQUIPMENT CORPORATION

200 Mercer Street Meadville, Pennsylvania

An important source for North American high-speed and specialty steels

ATLAS STEELS

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

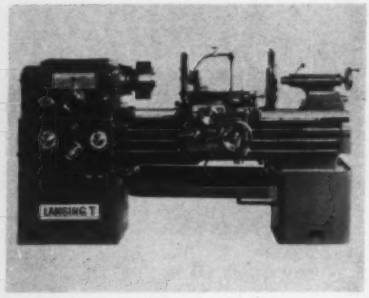
ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

mounted on the right slide finish bore, face and chamfer the housing. At the end of the strokes all slides retract, the part is unclamped and the pins withdraw automatically. (Ex-Cell-O Corp.)

For more data circle No. 39 on postcard, p. 95

Heavy-Duty Lathes

With its own lube-pump and dial-feed system, a quick-change sealed gear box on a new line of heavy-



duty lathes provides longitudinal and transverse feeds that are separate from threading feeds. The fully-geared headstock is designed for power, accuracy and durability. It boasts spindle speeds from 46-2000 rpm. (S & S Machinery Co.)

For more data circle No. 40 on postcard, p. 95

Contouring Control

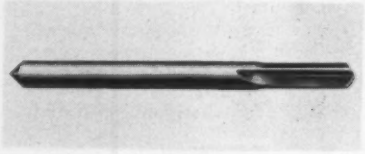
With the introduction of a word-address, binary-coded decimal for-

mat, it's possible to make, modify, reproduce and verify tapes on an automatic writing machine. Thus, control tapes for simple contouring operations can be prepared without the use of a computer. Computer routines are available to prepare binary-coded decimal, as well as straight binary tapes for processing more complicated parts. (The Bendix Corp.)

For more data circle No. 41 on postcard, p. 95

Drills Hard Steel

With a new line of solid-carbide drills, ease of sharpening results

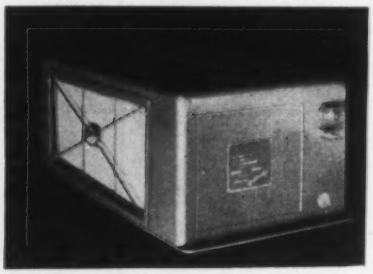


from simple tool geometry. This also means more holes per grind and longer tool life. The generous standard blank allows heavy-duty drilling with good chip clearance. The drills are precision ground for fast stock removal and close tolerances. (The Atrax Co.)

For more data circle No. 42 on postcard, p. 95

Air Conditioners

Remarkably complete, a new line of air conditioners controls air flows



in confined areas. Mechanical filters remove dust and dirt. Then, a solid 1-in. thick bed of activated, rechargeable cocoanut-shell carbon removes odors. Return and fresh make-up air enters the front of each unit. Discharge is at the bottom through louvers adjustable vertically or horizontally. (Correct-Air Corp.)

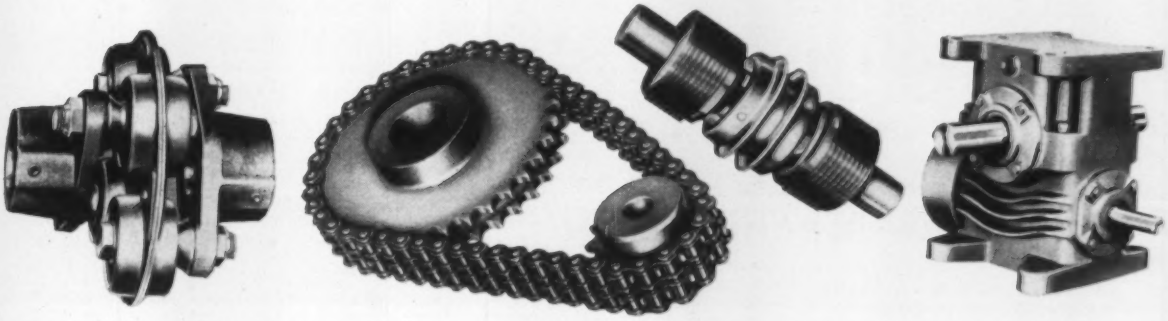
For more data circle No. 43 on postcard, p. 95

Analyser Tests Ceramic

Information on weight changes at different temperatures, when correlated with dilation characteristics, aids in analysing reactions of materials during a firing cycle. New

Morse has an answer to every industrial drive problem under the sun

Basic Drives, Speed Reducers, Couplings, Clutches—only Morse makes all four and only Morse stocks all four. For example, if your industrial drive problem involves basic drives such as roller chain, silent chain, and Hy-Vo® Drives, or "Timing"® belts, friction clutches, and couplings, too, look to Morse for the answer. You'll get impartial engineering help and immediate delivery.



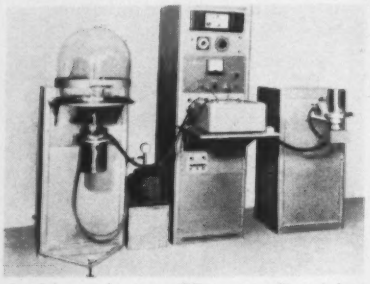
As for quality, Morse products speak for themselves: Morse timing chain is original equipment in over 76% of American cars. So whatever your industrial drive problem, see your Morse man. He's in the Yellow Pages. Or write: Morse Chain Co., Dept. 33-31, Ithaca, N.Y. Export Sales: Borg-Warner International, Chicago 3, Ill. In Canada: Morse Chain of Canada, Ltd., Simcoe, Ont.

MORSE

A BORG·WARNER INDUSTRY

BW

differential thermal analysis and thermal gravimetric analysis apparatus is available for this purpose. It tests ceramic and other similar materials at high temperatures. The apparatus consists of a furnace for vacuums and atmospheres up to 1500°C and a linear, 3-mode, temperature-control system with reactor control. It also has a preamplifier with temperature selector switch for six ranges and an X-Y recorder. The 10-in. axis shows temperature and the Y axis shows

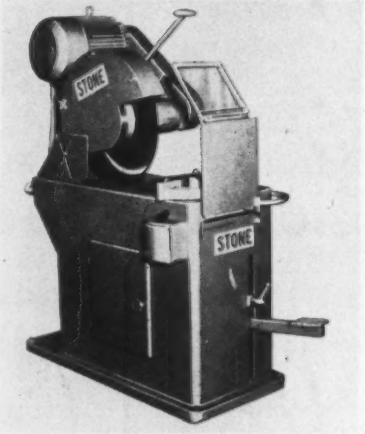


ignition loss. (Harrop Precision Furnace Co.)

For more data circle No. 44 on postcard, p. 95

Cutoff Machines

High-speed cutoff machines boast long blade life and low upkeep costs. They're available in traverse and chop-stroke models. Each unit has miter, notch and coping attachments. Thus, each job sets up quickly, without clamping or holding. A special-steel cutting blade delivers fine, fast cuts in most met-



als. It chops angle iron, bar stock, tubing, pipes and shapes. (Stone Machinery Co.)

For more data circle No. 45 on postcard, p. 95

Die Tilter

A die tilting unit safely speeds up spotting-in time on dies and molds up to 70 pct. Here's how it works. An elevating bed and lower platen ride on four 4-in diam guide bars. The crown is stationary. Die halves are secured to movable platens. They roll down easily from the crown and bed to tilting position. Once out, the platens rotate at the touch of a button. Upper and lower platens swing in a vertical arc as much as 220°. Each platen locates and locks at the desired angle for spotting-in. The unit is useful for die casting, blanking, form and drop forge die spotting-in operations. (Sanders Tool & Production Co.)

For more data circle No. 46 on postcard, p. 95

Verifies Tapes

To insure accurate input coding for machine-tool controls, this automatic writing machine prepares and verifies codes. As it types a proof document, it also punches a by-

WARNER & SWASEY COMPANY, leading machine tool manufacturer, after comparing several types of equipment, installed a MILBAND cut-off machine. One of the operations involves cut-off of 9⅝" lengths from A4150 hot rolled steel, 4⅛" diam., hardness Bhn 230, with MILBAND speed at 170 fpm and No. 3 feed setting. Plant location: New Philadelphia, Ohio.
Milband
MILBAND®

Band Saw Machine Tool

After a full year of on-the-job experience with their MILBAND Machine, WARNER & SWASEY COMPANY pointed out these specific benefits as conspicuously evident:

"NOTICEABLE ECONOMIES IN BLADE LIFE."—"CONSISTENT ACCURACY . . . in its ability to make exact cut-offs."—"STURDY, RIGID CONSTRUCTION . . . gives very accurate cuts, keeps vibration down to a minimum."—"MAINTENANCE AT VERY MINIMUM . . . very little or no upkeep to the MILBAND."

Rugged machine construction and rigid guide arms eliminate destructive vibrations. The MILBAND cut-off machine gives maximum blade life and cutting accuracy on your toughest, heavy-duty sawing jobs. This is made possible by Blade Control Engineering *at every critical point.* MILBAND'S 30° blade twist, 22" blade wheels and 15½" pivot span provide long blade life and accurate cutting.

Demonstrations are easily arranged. Write to us for the name of the MILBAND dealer nearest you . . . and for this free circular explaining all the *cost-cutting facts* about the MILBAND Machine Tool.

THE HENRY G. THOMPSON & SON CO.
278 Chapel Street, New Haven 5, Connecticut
Saw Specialists for 85 Years

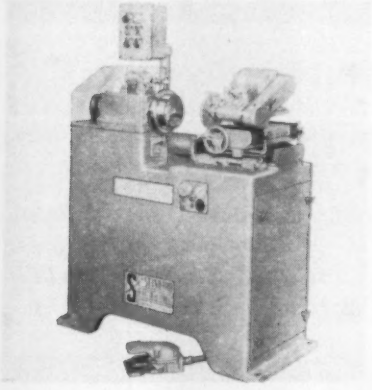
product tape. Then a tape reader, cable-connected to the writer, takes the tape. The document is then re-

typed. As each character is typed, the units compare its assigned code with the original code being scanned by the reader. If the two codes match, the writer punches the verified code in a new tape. If not, the writer doesn't punch. Its keyboard locks. (Freiden, Inc.)

For more data circle No. 47 on postcard, p. 95

Versatile Grinder

Powered by a ½-hp motor, a grinding-wheel head allows the instant interchange of various internal spindles. A manual cross feed adjusts the wheel head to the correct position for internal grinding. It also positions the wheel for external grinding. A hydraulically-



controlled air cylinder powers the horizontal transverse. All exposed ways are accordion protected. (The Standard Electrical Tool Co.)

For more data circle No. 48 on postcard, p. 95

Paints Inside of Tubes

A conduit - interior coating machine applies lacquers, enamels, waxes and similar materials inside pipe and conduit. Fully automatic, the machine receives conduit in a hopper, positions it and checks for correct length and location, clamps and shields it before spraying, and runs spray lances completely through each piece of tubing for uniform coverage. It uses hydraulic, pneumatic and electrical equipment for indexing and checking. The coat-

ing material comes to the spray lances from a pump circulating system. (Spraymation, Inc.)

For more data circle No. 49 on postcard, p. 95

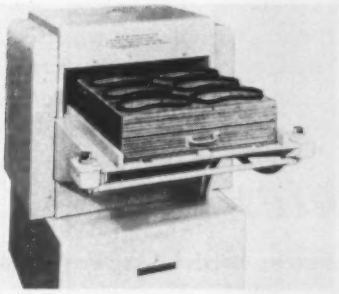
Cuts Nonferrous Metal

For straight and mitre cuts, a German-made machine saws profiles up to 3-in., solid materials up to 2-in. When using a pole-charging ac motor, the machine works at two speeds; 2000 rpm for cutting aluminum and other light metals, 1000 rpm for brass and copper. Its available with a special arrangement for making longitudinal cuts and with normal or pole-changing ac motor. (Beinhoff & Co.)

For more data circle No. 50 on postcard, p. 95

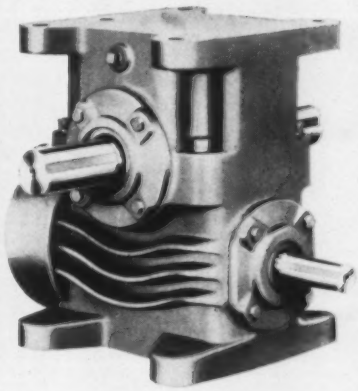
Hydraulic Cutter

In one complete, automatic operation, a hydraulic press cuts out multiple parts. It also trims skin-



packaged parts, cutting away all excess material. Platen area is a full 18x18 in. The cutting cycle is pre-

A Morse answer



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Extra-large bearings
Heavy-duty gearing
Universal mounting
All types available
Fractional to 53 hp. loads
Ratios 5:1 to 3600:1
Center distances 2" to 7"
Distributor-stocked

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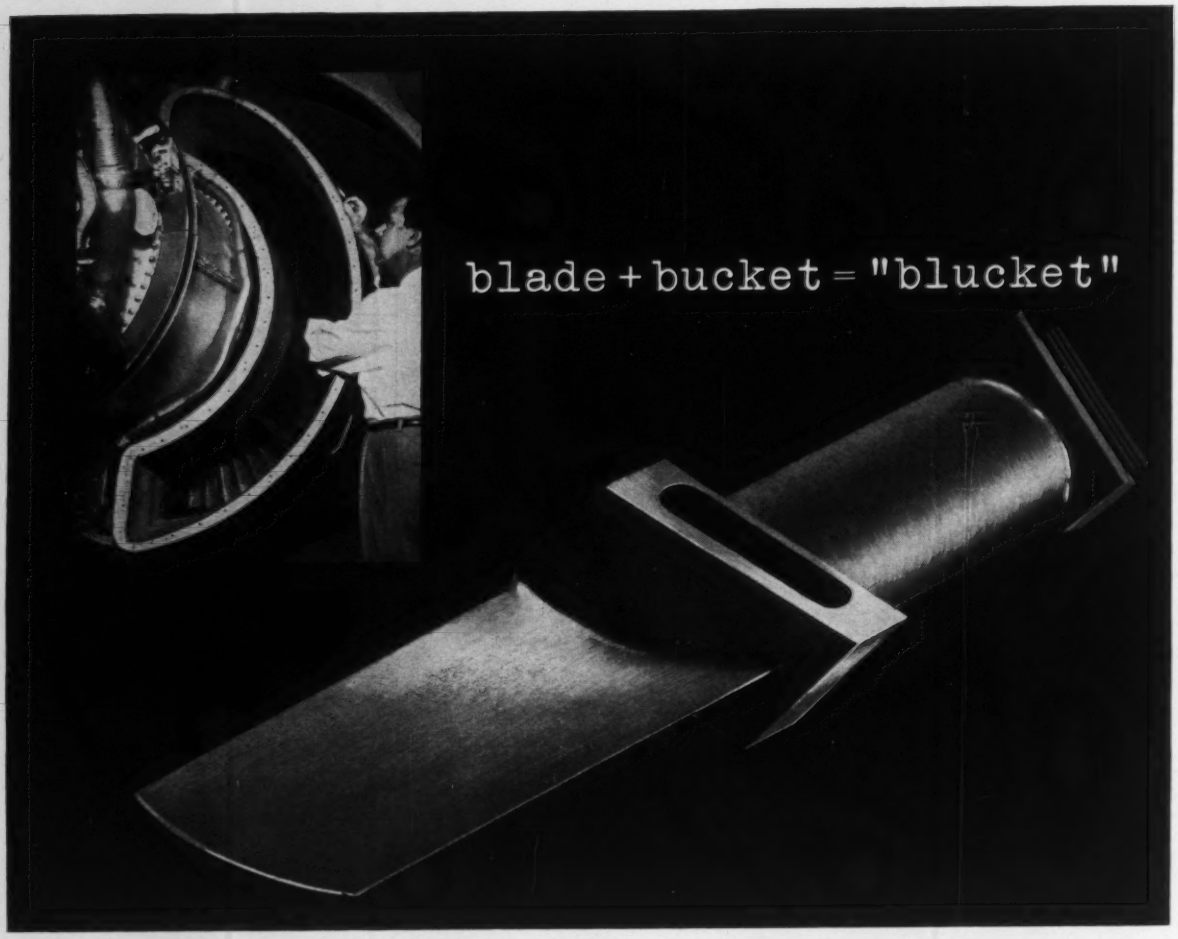


new design in *Carpenter* high temperature alloy V-57

Everything about this combination fan blade-turbine bucket is new except its predictable performance . . . a built-in characteristic of all Carpenter high temperature alloys.

V-57 is the super alloy now used to forge this unique new jet engine component. V-57 replaced A-286 (originally used) because of its superior mechanical properties at operating temperatures. Like all Carpenter vacuum melted metals, V-57 is produced with exclusive Carpenter quality controls that permit tighter forging tolerances, better machinability and improved cold forming properties.

Carpenter's VACUMELTROL® (induction vacuum) and CONSUMET® (consumable electrode) melting processes assure you more accurate forgings with better finishes, fewer rejects, faster production . . . and, most important . . . true predictable performance in your high temperature alloy components. Ask your Carpenter Representative for details.

Carpenter steel

you can do it ***consistently*** better with Carpenter Specialty Steels for specialists

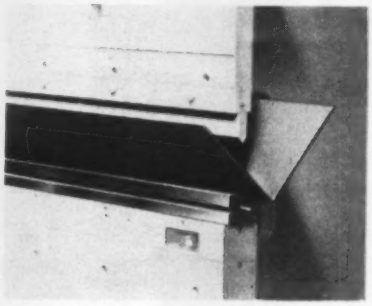
The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Webb Wire Division, New Brunswick, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.

set. It depends on the thickness of the piece being trimmed. Two start buttons, one on each side, require the use of both hands—a safety device for the operator's protection. Height is 45 in., width 27½ in., depth (including loading table) 43 in., weight 1200 lb. Ram force is 16 tons. (Product Packaging Engineering)

For more data circle No. 51 on postcard, p. 95

Press-Brake Dies

New press-brake dies feature wear-resistant surfaces that promise long life. They're made of tough alloy steel, that is heat treated and stress relieved. Smoothly finished work surfaces cut friction and wear, and keep the dies from defacing the work. They don't need heat treat-



ment before or after reworking. The average die fits any standard press brake equipped with die holder and ram adjustment. Special punches and dies are available. (Niagara Machine & Tool Works)

For more data circle No. 52 on postcard, p. 95

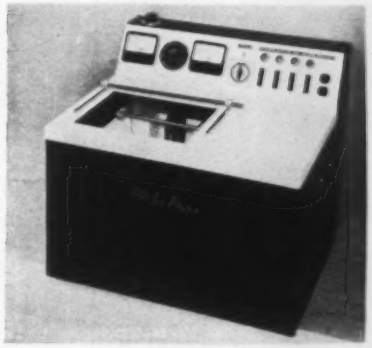
Cleans Solder Tips

By eliminating tip wear caused by cleaning abrasives, a new solder-tip cleaning sponge saves time and extends the soldering iron's life. It also does away with contamination caused by wiping rags. It cleans while the tip is hot, and doesn't remove protective solder. (Hexacon Electric Co.)

For more data circle No. 53 on postcard, p. 95

Plates Precious Metal

Measuring only 30 x 26 x 18 in. to the work top, this compact unit electroplates jewelry, electronics parts or pilot-plant setups. It does mass-production barrel or

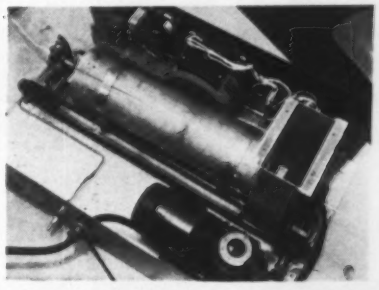


rack plating with any cold alkaline solution, and with most acid plating solutions. In operation, the solution is constantly drawn from the tank, circulated through a pump and a built-in filter, and returned to the tank under pressure. The plating solution swirls constantly around the work, assuring smooth, even deposits. (The Meaker Co., a subsidiary of Sel-Rex Corp.)

For more data circle No. 54 on postcard, p. 95

Marks Teflon Wire

Identification codes, on Teflon insulation, that withstand adverse space environments are possible through a new technique. The solution is an automatic sintering process using a special oven. In the oven, quartz infra-red tubes pro-



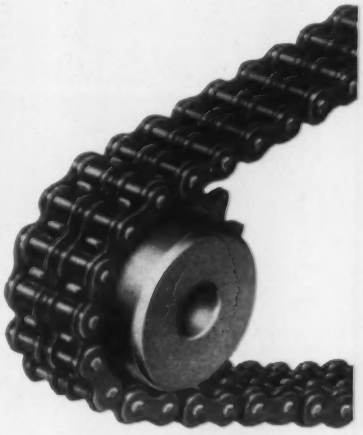
duce radiant heat that is quickly absorbed by the dark marking on the insulation. (The Martin Co.)

For more data circle No. 55 on postcard, p. 95

Long-Reach Spray Guns

An extension attachment fits all four models of an airless spray gun to give them a long reach. In each, the valve stem extends to the end

A Morse answer



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Statistical hardness control

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All parts automatically inspected

Drive-design service

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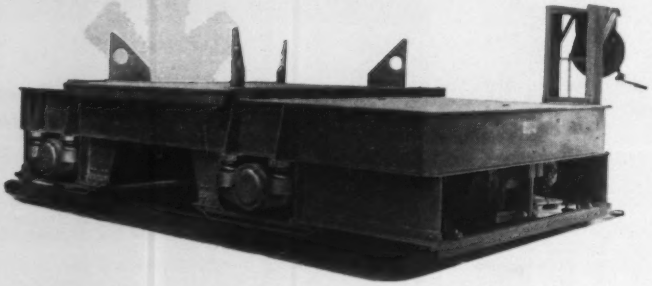
Tape Recording

Chart Recording

Atlas Builds Electronic Scales for-

Blast furnace scale cars
Coke weighing
Scrap bucket charging

This 60-ton scale car handles scrap buckets from the scrap yard to electric furnaces. For safety, the operator controls the car movement from a remote location. The electronic scale dial is mounted where the crane operator can watch it while loading the car.



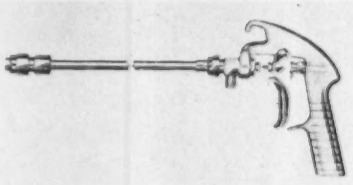
60-Ton Electronic Scale Car

ATLAS CAR & MFG. CO.

1100 IVANHOE ROAD / CLEVELAND 10, OHIO

NEW EQUIPMENT

of the extension tube. A shutoff needle, directly behind the nozzle orifice, provides drip-free shutoff. Stainless-steel body, extension tube

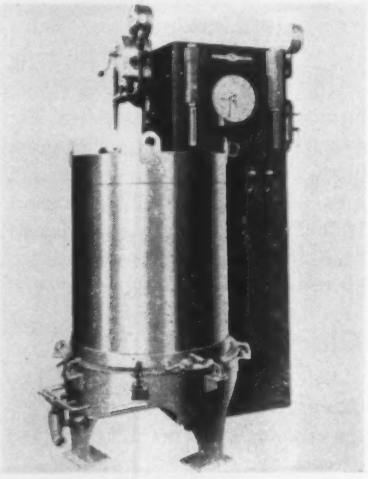


and cap, plus Teflon packings mean high corrosion resistance. The guns are light and balanced. They're for use in airless paint spraying and coating at pressures up to 2000 psi. (Spraying Systems Co.)

For more data circle No. 56 on postcard, p. 95

Tempers Stainless

Several new features are built into a line of atmosphere furnaces. A full-length, bell-type, insulating outer shell gives efficient heat retention for economical power usage. Within the outer shell, a sealed retort encloses the work load, heating elements, baffles and forced-convection fan. Convection-circulated atmo-



sphere insures fast heat-up and uniform heat distribution. In addition, exposing the inner retort to room air during the cooling cycle means rapid cool-down. (C. I. Hayes, Inc.)

For more data circle No. 57 on postcard, p. 95

Emergency Lighting

Low in cost, an emergency lighting unit protects against power-

failure hazards. It operates instantaneously, if power fails, and shuts itself off when power comes on again. A 9-v, dry-cell battery powers the unit. It gives up to 3¼ hours of emergency light with one lamp, and 1½-hr protection with two lamps. It's equipped with a 25-w sealed beam lamp that mounts on the unit's case or connects re-

motely to light adjacent areas. The second lamp is optional. (The Electric Storage Battery Co.)

For more data circle No. 58 on postcard, p. 95

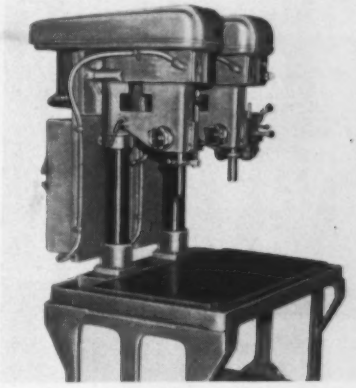
Lots of Color

Color coding of an automatic-welding wire line has a specific color for each grade of wire; in some cases two colors. The color on the cardboard coil liner is also on the special labels for all spools, reels, cartons and other containers. This eliminates scrap loss due to lack of identification. All labels show complete information on size, grade, order number, heat number and weight. In conjunction with the color-code program, special pocket cards show the complete color code to aid the warehouse man in selecting wire and checking the wire inventory. (American Chain & Cable Co., Inc.)

For more data circle No. 59 on postcard, p. 95

Drilling Machine

Capacity of this new driller is 1-in. diam in mild steel. All controls are located for quick, easy access. A start/stop push button switch is mounted on the front of the machine. In back, the hinged belt guard facilitates belt changes. Five step pulleys progress geometrically. This permits belt changing from step to step without adjusting the motor bracket. The machine



has 6-in. spindle travel with the sensitive hand feed or with a power feed. (Buffalo Forge Co.)

For more data circle No. 60 on postcard, p. 95

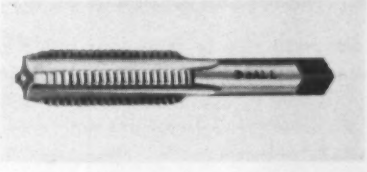
Low-Cost Scrapbreaker

An inexpensive new scrapbreaker gives a precise blow that produces concentrated impact. It comes in two basic models, but may be custom-built to suit exact job requirements. One basic unit is for use with a standard crane. The other has its own winch for lifting the ram. The machines can easily break 45-50 tons of motor blocks in an 8-hr day. Even an inexperienced operator can break 8 tons in 45 minutes. (Select Enterprises Inc.)

For more data circle No. 61 on postcard, p. 95

Special-Purpose Taps

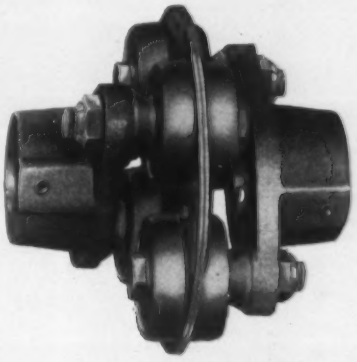
These tapping units have a different cutting action than general-purpose taps. They're designed and surface treated for tapping aluminum, soft bronze, magnesium, stainless steel and other metals that have



stringy chips. Also available are taps for cast iron, brass and other hard-chip materials. Style selection includes fractional, machine-screw and taper-pipe tap sizes. (The DoAll Co.)

For more data circle No. 62 on postcard, p. 95

A Morse answer



Morflex couplings

...when the problem involves vibration and misalignment

Isolate vibration

Cushion shock

Absorb misalignment

Torsionally flexible

Impervious to water, dirt, oil

Arrest electrolysis

Distributor-stocked

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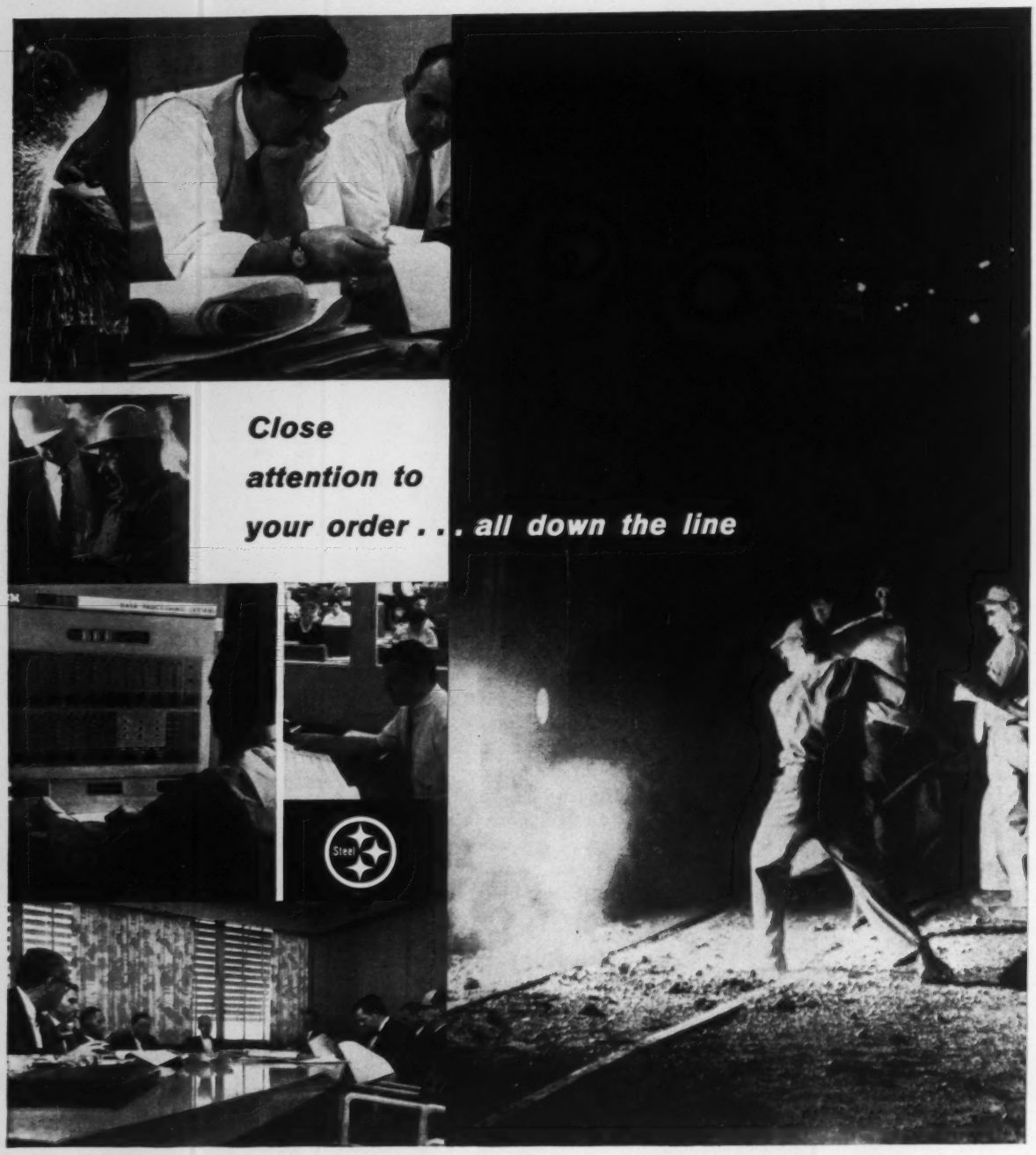

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Auto Orders Support Uptrend

It's nothing like a major development, but automotive orders have firmed up a bit.

March will be the best month in shipments since August, 1960. And April looks a bit better.

■ A small pickup in automotive steel buying is strengthening the mild upturn in the steel market.

The fresh orders from automakers are nothing to cheer about in themselves. But added to a general pickup in steel business, the small improvement of recent weeks continues to advance.

Longer Lead Times—One result is likely to be a lengthening of lead times, probably in the next few weeks. This is true in almost all steel grades, with exceptions varying by geographic region. Examples: In the East, one mill has notified salesmen to quote longer lead times on galvanized. In Chicago, a one to two-week advance on sheet products is shaping up.

This means that some steel users who have relied on a one or two week inventory may have to scramble for a brief period in April unless they can adjust their inventories to the longer mill lead times.

No Real Problem — This isn't likely to be more than a brief flurry, however. In spite of recent gains, the market is still not strong enough for deliveries to pose a lengthy problem. One result might be a boost in sales by steel service centers. Some warehouses are planning boosts in orders and some have talked about June delivery.

The pickup in auto steel orders, while encouraging at the moment, is not enough to add any optimism to the gloomy automotive outlook. Ford and General Motors divisions may take up to 30 pct more steel in April than in March or February. But this would still not bring shipments up to the January level.

Better Orders — But, for some time, there have been few cancellations. This indicates that steel orders from automakers will follow production schedules. These, in turn, will depend on spring retail sales of new cars. April tonnage now on the books should result in mills' improving their operating rates. This, of course, is hedged against possible cancellations.

As a result of these developments, demand continues to rise, but not as decisively nor as fast as indicated. But March is shaping up as the best month for shipments since Aug. of 1960.

Because of the slower rate of advance, there is some skepticism about the April outlook. Orders indicate a further improvement, but there is some hesitancy and mills are not getting the kind of advance they feel is indicated by the market.

Bottomed Out — There is little doubt but that consumption has bottomed out and steel use should get a lift in the second quarter. Some estimates are an increase of 2 million tons to a rate of about 18 million tons for the quarter.

Any rise in consumption has to be accompanied by some buildup in inventory. Process stocks go up automatically with increased production and raw steel stocks would go up a little. Furthermore, there is still some tonnage to be gained from an end of inventory liquidation. Consumption has been running around 5.5 million tons a month. March will be the first month since August to have shipments go over 5 million tons.

District Steel Production Indexes 1957-59=100

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	89	87	84	129
Buffalo	67	71	72	151
Pittsburgh	77	79	75	140
Youngstown	63	62	79	148
Cleveland	67	70	72	168
Detroit	90	90	89	146
Chicago	93	93	93	145
Cincinnati	89	86	90	140
St. Louis	101	102	107	109
Southern	93	91	90	130
Western	108	103	101	124
U. S. Index	84.5	84.4	84.9	139.9

Source: American Iron & Steel Institute

Steel Production, Composite Prices

Production	Last Week	Two Weeks Ago	To Date 1961	To Date 1960
(Net tons, 000 Omitted)	1,574	1,573	16,715	29,526
Ingot Index				
(1957-59=100)	84.5	84.4	81.6	144.1
Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel, base (Cents per lb)	6.196	6.196	6.196	6.196
Pig Iron (Gross ton)	$66.44	$66.44	$66.44	$66.41
Scrap No. 1 hvy (Gross ton)	$38.50	$37.83	$33.50	$33.33
No. 2 bundles	$27.83	$27.83	$23.83	$22.67

Sales Facts Should Be Heard

Leading metals executives say purchasing men should listen to the message of salesmen.

This might result in savings from new materials, methods.

■ "Listen to the peddler when he comes around," says F. J. Close, vice president and general sales manager, Aluminum Co. of America.

"Are you so busy that you close your mental shutters?" asks J. E. Timberlake, vice president, sales, Jones & Laughlin Steel Corp.

Collectively and individually, copper producers are working harder than ever to develop new products and new applications, says H. M. Weed, vice president, Anaconda Sales Co.

These thoughts were offered Pittsburgh purchasing men last week by suppliers of three major metals. The basic message was the same for all three: Producers are pushing for new materials and new ways to use materials. Users should be alert and receptive to the savings offered by this push.

New Thinking — Need for new thinking is strongly emphasized. Mr. Close says any evaluation of aluminum should give full consideration to light-weight, bright-surface and other special properties.

Mr. Timberlake notes familiarity with steel doesn't mean a user is making the most efficient use of this material.

"We present a traditional metal," he says. He explains this can mean a tendency toward "fixed attitudes" by users.

Long-Range—No early end to the buyers' market or the sellers' push is seen for steel, aluminum or copper. As an indication of present supply, Mr. Timberlake points out steel mills were able to eliminate all shortages last year within 4½ months of a 116-day strike. He sees supply staying ahead of demand in the future.

F. J. CLOSE: "Get the message!"

"As long as major products remain profitable, competition will force mills to build capacity in anticipation of needs."

Mr. Close expresses a similar thought for aluminum.

"I don't think you'll ever again reach a point where you can't get enough aluminum."

Mr. Weed says there are questionmarks in Africa and there could be labor problems for one producer this summer. However, he points out the copper industry has considerable reserve capacity. There was only one week of production lost in Belgian Congo mines last year.

Strong Supply—"Supply will be excellent in 1961 and will continue to be for the foreseeable future."

On the matter of prices, metals men all have problems.

"We don't get enough money for our product," says Mr. Close. However, he does not make any prediction of price hikes. "We're fighting for our place."

Mr. Timberlake notes the steel industry has swallowed three cost boosts since 1958 with no general price increase. He says the two labor hikes last year added 25¢ an hour to J&L's employment cost. This he calls the largest jump for any one year without a price increase.

Price Rise?—With another wage round due for October and with capital costs rising at the same time. Mr. Timberlake feels the squeeze could reach a point where "a price increase may be absolutely necessary."

Regarding the influence of foreign competition on domestic pricing, he says the mills are not working against fixed levels.

"There can be no such thing as meeting foreign price competition. We don't know how low they can go."

Mr. Weed sees copper prices holding steady or strengthening. He feels speculative markets have had undue influence on copper prices and have been responsible for much of the price instability.

The Anaconda executive also feels that foreign competition offers prices usually lower than U. S. producers. But he still says there is a need here to put price more on a cost basis.

A fresh approach to metal cleaning

Metal parts and assemblies which have undergone machining, grinding, heat treating, forging or press drawing operations usually have to be cleaned prior to the next processing step or final packaging.

A cleaning compound is selected according to the type of soil, its stubbornness and whether the surface has to be chemically clean—as required if plating or enameling are to follow.

Since the development of surface active agents it has been found unnecessary in intra-operation cleaning to use a harsh alkali. Today's metal cleaning compounds seldom contain free caustic, yet they are far more effective than the earlier materials. By combining detergents with mild alkalies there are definite advantages of easier rinsing, better soil dispersion and emulsification, plus minimum resoiling from a used bath.

Determining the concentration of a cleaning bath and its rate of exhaustion is one of the puzzlers for many a metalworking plant. To be accurate, a chemical titration is more dependable than short-cut "gadgets" sometimes offered. The Houghton technical staff man uses this kit for exact measurement of the strength of a solution. Description or demonstration is available to our customers upon request.

Excessive heat unnecessary

Temperatures can be lower, too, hence easier on the operators. The same modern cleaner which will remove light soil at room temperature will be more effective at 120°-140°, but it need not be raised to the boiling point, with resultant fumes, steaming and discomfort.

The detergents used in these modern cleaning formulations for use in power washers are non-foaming, therefore do not interfere with maximum spray impinging force which helps dislodge adhering soil.

Rust protection built in

Another modern trend in cleaning compounds is to add a water-soluble rust preventive, to protect against early rusting by leaving a very slight film on the metal—one which does not interfere with subsequent operations. Of course, this is not possible when cleaning before plating or porcelain enameling where a chemically clean surface is required.

One more improvement in today's cleaners is the property of water softening. These newer products contain sequestering or chelating agents which combine with hard water constituents, holding them in solution and preventing precipitation on the work or in the rinse tank.

This ability of today's metal cleaners to lower surface tension, to protect against early rusting and to soften hard water has resulted in industry's taking a new look at their cleaning practices. Fewer varieties are required because a single cleaner will do a far wider range of work than could the old style free-caustic varieties.

Houghton's new approach to cleaning is typified by our Cerfa-Kleen line of soak tank and power washer compounds—both for cold and hot solutions. If you need a plater's cleaner, or one for removal of inorganic soil, or an acid type, we have those too. **Write E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.**

Houghton

INDUSTRY'S PARTNER IN PRODUCTION

Mills Review Product Pricing

Whether or not mills will increase or drop base prices is still undecided.

But steelmakers are closely reviewing pricing. Recent action by USS on tinplate and pipe reflects this study.

■ Mills are probably still undecided on whether or not to change steel base prices.

But this much is clear: Steelmakers are taking a hard look at pricing — both in terms of base prices and extras. Any definite action on general increases in prices probably won't come until April. By then, the steel companies will be able to assess the cost of the labor increases made last December (See p. 7.)

Cost Squeeze—Typical of the attention now given pricing is the recent comment of Logan T. Johnston, president of Armco Steel Co. "We are deeply concerned about pricing ourselves out of certain markets by raising steel prices."

"Also we must constantly compete with imports. But we are laboring under increases which will continue to go up without compensating increases in worker productivity. Productivity has gone up about 2.6 pct according to our latest count while cost of labor has gone up 3.7 pct."

The pangs of the current recession are also working a long overdue revolution in merchandising and promotion methods within the industry, Mr. Johnston pointed out.

Action by USS — Recent moves by U. S. Steel Corp. reflect this greater interest in pricing. Last week the Corporation cut mill prices on tinplate 10¢ a base box at its Fairless, Pa., plant and the Fairfield, Ala., plant of its Tennessee Coal & Iron Division. (For new prices see p. 125).

This action eliminated the price premium these mills used to command over other USS tinplate basing points. On the East Coast it brought USS tinplate prices equal to those of Bethlehem Steel Co.'s base price at Sparrows Pt., Md.

Pipe Price Change — In other action, U. S. Steel's National Tube Div. increased mill base prices for all grades of 4½-in., 5-in., and 5½-in. diameter oil well casing about 1 pct. Prices of larger diameter casing were unchanged.

These moves followed several earlier changes. The Corporation recently revised some extras on carbon sheet and strip. The changes were minor, involving a slight liberalizing of chemical extras and a slight tightening of width extras.

About a month ago the Corporation, followed by Bethlehem, eliminated the length extra charge on hot-rolled bar orders on all pieces ordered cut to a specified length of 20 ft. or less.

Sheet and Strip—The past week has brought a little boost in automotive buying in some districts, particularly in the **Midwest.** While the tonnages involved aren't very large, they have helped brighten the sheet and strip market. In **Detroit,** Chrysler Corp. added about 8000 cars to its March schedule. Consequently, it has ordered more steel. The action brought a favorable reaction from mills in **Cleveland.** April and May orders from both General Motors Corp. and Ford Motor Co. are stronger than March. A **Pittsburgh** mill reports hot-rolled sheet orders for March have been making good gains as the month progresses. In **Chicago,** mills say a general increase in sheet business will force a lengthening in lead times before very long. The dullest market is the **East Coast,** due to lack of support from automotive and steel service center buyers. Miscellaneous users are currently providing most of the support.

Bar—There is a noticeable improvement in orders for products used in the construction industry—notably rebars. Along the **East Coast,** this is the only bar product showing any new activity. A **Pittsburgh** mill says its March shipments will be up this month over February. From **Cleveland** comes word that rebars are an active market item now that winter's worst is about over. In other areas of the **Midwest,** milder weather has brought with it a definite improvement in construction activity and the demand for rebars. In **Chicago,** there is even an improvement being shown in cold-drawn bars.

Pipe and Tubing — Orders for standard pipe have moved up a little over the past two weeks, but oil country seamless is moving sideways at about January-February levels. **Pittsburgh** producers say they are getting a little seasonal lift in standard pipe.

Wire—Building trades are moving strong on wire. However **Cleveland** producers say the real upswing in welded wire fabric and other construction products hasn't started.

PURCHASING AGENT'S CHECKLIST

What can automakers expect in next ten years in metal supplies and prices? P. 48

New LIFO regulation may help users cut taxes. P. 50

Probe of copper and brass puzzles nonferrous industry. P. 122

COMPARISON OF PRICES

(Effective March 20, 1961)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (*).

	Mar. 20 1961	Mar. 13 1961	Feb. 20 1961	Mar. 22 1960
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.30
Plates, wrought iron	14.10	14.10	14.10	14.10
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tin plates (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.65
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.35
Special coated mfg. ternes	9.90	9.90	9.90	9.90
Bars and Shapes: (per pound)				
Merchants bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	46.75
Wrought iron bars	14.90	14.90	14.90	14.90
Wires: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 10 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.75
Light rails	6.725	6.725	6.725	6.725
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.196¢

	Mar. 20 1961	Mar. 13 1961	Feb. 20 1961	Mar. 22 1960
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.60	$70.68	$70.68	$70.57
Foundry, South Cin'ti	71.92	71.92	71.92	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.11	70.11	70.11	70.07
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb.‡	11.00	11.00	11.00	11.00
Pig Iron Composites: (per gross ton)				
Pig iron	$66.44	$66.44	$66.44	$66.41
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$35.50	$35.50	$31.50	$34.50
No. 1 steel, Phila. area	42.50*	40.50	38.50	35.00
No. 1 steel, Chicago	37.50	37.50	30.50	30.50
No. 1 bundles, Detroit	33.50*	32.50	29.50	30.50
Low phos., Youngstown	40.50*	39.50	36.00	37.50
No. 1 mach'y cast, Pittsburgh	45.50	45.50	44.50	52.50
No. 1 mach'y cast, Phila.	50.50*	49.50	49.50	51.50
No. 1 mach'y cast, Chicago	51.50	51.50	46.50	52.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$38.50*	$37.83	$33.50	$33.33
No. 2 bundles	27.83	27.83	23.83	22.67
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75-15.50	14.75-15.50	14.75-15.50	14.75-15.50
Foundry coke, prompt	18.50	18.50	18.50	18.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	29.00	29.00	29.00	33.00
Copper, Lake, Conn.	29.00	29.00	29.00	33.00
Tin, Straits, N. Y.	100.50†	100.50	100.50	100.25
Zinc, East St. Louis	11.50	11.50	11.50	13.00
Lead, St. Louis	11.00	11.00	11.00	11.80
Aluminum, ingot	26.00	26.00	26.00	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ** Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PETERSON STEELS, INC.

Union, N. J. · Wethersfield, Conn.
Detroit, Mich. · Melrose Park, Ill.

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PETERSON STEELS, INC.

Union, N. J. · Wethersfield, Conn.
Detroit, Mich. · Melrose Park, Ill.

Prices Continue Upward Movement

Prices are up again this week. But the rise is not as sharp as in previous weeks.

Many scrapmen believe the market is now pausing in anticipation of April lists.

■ Scrap prices continue to rise. But the large gains of recent weeks are not as general this week. It appears that the market is pausing in anticipation of April lists.

Export demand continues to be the big market factor. There are only scattered reports of any serious domestic interest. Because of this, dealers in many key areas remain bullish and aren't anxious to sell large tonnage at current levels. This is especially true of inland markets.

Prices in Pittsburgh remain unchanged. However, the railroad is studying a possible reduction in freight rates between Pittsburgh and Philadelphia. Scrapmen in Pittsburgh might be interested in moving tonnage to the East Coast for export. But it's unlikely that rates will drop low enough to give a substantial profit.

Pittsburgh—The market remains quiet but firm. Export orders still seem to be just out of the reach of local yards. However, the gap is small enough to keep pressure on district prices. A change in freight rates to Philadelphia could increase the pressure on local supply but the threat has brought no move by district consumers to bid against export. There is still no volume buying. Prices are holding at levels that will meet the small local demand and prevent heavy shipments to more active markets.

Chicago—While scrap continued to move in heavier volume this week, prices show little change. Minor gains were offset by sales at lower prices in scattered grades. The market appears to be waiting for new factory list prices. However, there is some forecasting that bundles prices will rise $1 to $2 on the new lists because of delinquencies among producers and short sales at the broker level.

Philadelphia—Prices continue to rise on the strength of export demand. Some area mills came into the market last week, but tonnage was limited. Dealers are able to keep their yards clear by meeting the export demand. Scrapmen here continue to say that any major domestic interest will bring a big jump in prices. The price of electric furnace bundles, last week, should have been $43.00 to $44.00.

New York—Steelmaking grades are up $1 on sales for export. The firmness, caused by an increase in Japanese buying plans, continues. Many dealers say this market will get much tighter in the weeks ahead. They're keeping a sharp eye on plans of domestic mills in an adjacent area. Right now all sales in this area are for export.

Detroit—General Motors Corp.'s Flint Fisher Body plant sold 1500 tons of No. 1 bundles recently. The price was $3 higher than a preceding sale. The scrap went to the dock. This information lends to the speculation that April's industrial list may be strong. Local mills are not active buyers. One large mill is taking nothing. Another is practically rationing its incoming shipments.

Cleveland—Market is up $1 as a Valley mill made a mid-month purchase of No. 1 busheling and No. 1 dealer bundles for $40. Dealers remain bullish over the export market; higher prices are expected. Movement on old orders is proceeding at a steady pace. Foundry activity is picking up slightly. Foundry scrap inventories are low.

Cincinnati—Area mills are expected to be in the market again in April. Dealers hope for a $2 jump in prices. If the mills won't pay the increase, scrap will probably go out of the district.

St. Louis—Mills are not scrambling for scrap, but they are buying. Mills in the area continue to operate at a rate well above most of the nation.

Birmingham — Export continues to bolster the market while domestic sales are down. Dealers from Birmingham and as far north as Decatur are shipping to Mobile. Prices there are high enough to make it profitable.

Buffalo—Sales this week raised No. 1 cupola cast and No. 1 machinery cast $2. There was some export buying in No. 1 steel scrap. But there is no radical change in the local market as far as mill consumers are concerned.

Boston — Export continues to dominate this market. But there is some domestic demand on a limited scale.

West Coast—The Japanese are planning to take about 315,000 tons from the West Coast ports during the next quarter. The increased orders have firmed the market.

Houston—The market strengthened with the re-entry of the district mill. Scrap is reportedly moving better—even at higher prices.

SCRAP PRICES *(Effective March 20, 1961)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$35.00 to $36.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	36.00 to 37.00
No. 1 factory bundles	44.00 to 45.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	20.00 to 21.00
Low phos. punch'gs plate	41.00 to 42.00
Heavy turnings	32.00 to 33.00
No. 1 RR hvy. melting	40.00 to 41.00
Scrap rails, random lgth	47.00 to 48.00
Rails, 2 ft and under	50.00 to 51.00
RR specialties	46.00 to 47.00
No. 1 machinery cast	45.00 to 46.00
Cupola cast	38.00 to 39.00
Heavy breakable cast	35.00 to 36.00
Stainless	
18-8 bundles and solids	185.00 to 190.00
18-8 turnings	105.00 to 110.00
430 bundles and solids	85.00 to 90.00
410 turnings	60.00 to 65.00

Chicago

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	38.00 to 39.00
No. 1 factory bundles	43.00 to 44.00
No. 2 bundles	26.00 to 27.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. forge crops	46.00 to 47.00
Low phos. punch'gs plate, ¼ in. and heavier	44.00 to 45.00
Low phos. 2 ft and under	42.00 to 43.00
No. 1 RR hvy. melting	42.00 to 43.00
Scrap rails, random lgth	50.00 to 51.00
Rerolling rails	60.00 to 62.00
Rails 2 ft and under	53.00 to 54.00
Angles and splice bars	47.00 to 48.00
RR steel car axles	63.00 to 64.00
RR couplers and knuckles	47.00 to 48.00
No. 1 machinery cast	51.00 to 52.00
Cupola cast	46.00 to 47.00
Cast iron wheels	37.00 to 38.00
Malleable	49.00 to 50.00
Stove plate	41.00 to 42.00
Steel car wheels	45.00 to 46.00
Stainless	
18-8 bundles and solids	180.00 to 185.00
18-8 turnings	105.00 to 110.00
430 bundles and solids	95.00 to 100.00
430 turnings	60.00 to 65.00

Philadelphia Area

No. 1 hvy. melting	$42.00 to $43.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	43.00 to 44.00
No. 2 bundles	27.00 to 28.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	13.00 to 14.00
Mixed bor. short turn.	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Shoveling turnings	20.00 to 21.00
Clean cast. chem. borings	25.00 to 26.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft punch'gs	45.00 to 46.00
Elec. furnace bundles	44.00 to 45.00
Heavy turnings	27.00 to 28.00
RR specialties	45.00 to 46.00
Rails, 18 in. and under	52.00 to 54.00
Cupola cast	38.00 to 39.00
Heavy breakable cast	40.00 to 41.00
Cast iron car wheels	43.00 to 44.00
Malleable	45.00 to 46.00
No. 1 machinery cast	50.00 to 51.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	27.50 to 28.50
No. 1 dealer bundles	31.00 to 32.00
No. 2 bundles	22.00 to 23.00
Machine shop turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	13.00 to 14.00
Low phos. 18 in. and under	37.00 to 38.00
Rails, random length	41.00 to 42.00
Rails, 18 in. and under	46.00 to 47.00
No. 1 cupola cast	37.00 to 38.00
Heavy breakable cast	31.00 to 32.00
Drop broken cast	46.00 to 47.00

Youngstown

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	18.00 to 19.00
Low phos. plate	40.00 to 41.00

Cleveland

No. 1 hvy. melting	$34.50 to $35.50
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	35.50 to 36.50
No. 1 factory bundles	41.00 to 42.00
No. 2 bundles	22.50 to 23.50
No. 1 busheling	35.50 to 36.50
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Cut structural & plates, 2 ft & under	40.00 to 41.00
Low phos. punch'gs plate	36.50 to 37.50
Drop forge flashings	34.50 to 35.50
Foundry steel, 2 ft & under	33.00 to 34.00
No. 1 RR hvy. melting	38.50 to 39.50
Rails 2 ft and under	51.00 to 52.00
Rails 18 in. and under	53.00 to 54.00
Steel axle turnings	26.00 to 27.00
Railroad cast	47.00 to 48.00
No. 1 machinery cast	47.00 to 48.00
Stove plate	41.00 to 42.00
Malleable	46.00 to 47.00
Stainless	
18-8 bundles	165.00 to 170.00
18-8 turnings	90.00 to 95.00
430 bundles	80.00 to 85.00

Buffalo

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 busheling	29.00 to 30.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	14.00 to 15.00
Low phos. plate	35.00 to 36.00
Structurals and plate, 2 ft and under	37.00 to 38.00
Scrap rails, random lgth	38.00 to 39.00
Rails 2 ft and under	48.00 to 49.00
No. 1 machinery cast	44.00 to 45.00
No. 1 cupola cast	38.00 to 39.00

St. Louis

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	29.00 to 30.00
Foundry steel, 2 ft	32.00 to 33.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	25.00 to 26.00
Machine shop turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	21.00 to 22.00
No. 1 RR hvy. melting	37.00 to 38.00
Rails, random lengths	39.00 to 40.00
Rails, 18 in. and under	42.00 to 43.00
RR specialties	39.00 to 40.00
Cupola cast	40.00 to 41.00
Heavy breakable cast	33.00 to 34.00
Stove plate	35.00 to 36.00
Cast iron car wheels	35.00 to 36.00
Rerolling rails	51.00 to 52.00
Unstripped motor blocks	35.00 to 36.00

Birmingham

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	10.00 to 11.00
Electric furnace bundles	35.00 to 36.00
Elec. furnace, 3 ft. & under	34.00 to 35.00
Bar crops and plate	39.00 to 40.00
Structural and plae, 2 ft	38.00 to 39.00
No. 1 RR hvy. melting	34.00 to 35.00
Scrap rail, random lgth	40.00 to 41.00
Rails, 18 in. and under	45.00 to 46.00
Angles and splice bars	39.00 to 40.00
No. 1 cupola cast	44.00 to 45.00
Stove plate	44.00 to 45.00
Cast iron car wheels	35.00 to 36.00
Unstripped motor blocks	33.00 to 34.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	26.00 to 27.00
No. 2 dealer bundles	20.00 to 21.00
Machine shop turnings	2.00 to 3.00
Mixed bor. and turn.	3.00 to 4.00
Shoveling turnings	5.00 to 6.00
Clean cast. chem. borings	17.00 to 18.00
No. 1 machinery cast	36.00 to 37.00
Mixed yard cast	32.00 to 33.00
Heavy breakable cast	30.00 to 31.00
Stainless	
18-8 prepared solids	160.00 to 165.00
18-8 turnings	80.00 to 85.00
430 prepared solids	70.00 to 75.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	29.00 to 30.00
Drop forge flashings	27.00 to 28.00
Machine shop turn.	8.00 to 9.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	12.00 to 13.00
Cast iron borings	12.00 to 13.00
Heavy breakable cast	27.00 to 28.00
Mixed cupola cast	34.00 to 35.00
Automotive cast	38.00 to 39.00
Stainless	
18-8 bundles and solids	150.00 to 155.00
18-8 turnings	50.00 to 55.00
430 bundles and solids	55.00 to 60.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.50 to $30.50
No. 2 hvy. melting	23.00 to 24.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	15.00 to 16.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	4.00 to 4.50
Shoveling turnings	8.50 to 9.00
Clean cast. chem. borings	13.50 to 14.50
No. 1 machinery cast	40.00 to 41.00
Mixed cupola cast	32.00 to 32.50
Heavy breakable cast	26.50 to 27.50

San Francisco

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	37.00
No. 1 dealer bundles	32.00
No. 2 bundles	$23.00 to 25.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 cupola cast	46.00 to 48.00

Los Angeles

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	$37.00 to 38.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	25.00
Machine shop turn.	15.00
Shoveling turnings	15.00
Cast iron borings	15.00
Elec. furnace 1 ft. and under (foundry)	45.00 to 47.00
No. 1 cupola cast	45.00

Seattle

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	38.00
No. 2 bundles	25.00
No. 1 cupola cast	36.00
Mixed yard cast	31.00

Hamilton, Ont.

Brokers buying prices per net ton on cars:

No. 1 hvy. melting	$28.50
No. 2 hvy. melting cut 3 ft and under	25.00
No. 1 dealer bundles	28.50
No. 2 bundles	18.00
Mixed steel scrap	20.00
Bush., new fact., prep'd.	28.50
Bush., new fact., unprep'd.	22.00
Machine shop turn.	8.00
Short steel turn.	12.00
Mixed bor. and turn.	12.00
Cast scrap	32.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$39.00
No. 2 hvy. melting	36.00
No. 2 bundles	28.00
Machine shop turn.	8.00
Shoveling turnings	11.00
Cut structural plate 2 ft & under	$49.00 to 50.00
Unstripped motor blocks	32.00 to 33.00
Cupola cast	37.00 to 38.00
Heavy breakable cast	30.00 to 31.00

Copper-Brass Probe Puzzles Industry

A Federal Grand Jury will investigate the copper and brass industry in Connecticut.

Industry officials don't know why. Nor where the Justice Dept. is aiming its probe.

■ The Justice Dept. apparently has its eye on the U. S. copper and brass industry. But, as of early this week, no one seemed to know exactly what, why or where.

At the request of John J. Galgay, Justice Dept., New York, Federal District Court Judge Robert P. Anderson at Hartford, Conn., has impaneled a Federal Grand Jury to investigate. Mr. Galgay will present the government's case.

The subject: Possible anti-trust violations.

"Certain Persons"—Judge Anderson charged the jury, "You will investigate whether a true bill shall be returned with regard to certain persons connected with the copper and brass industry in Connecticut."

Mr. Galgay refused to say whether he would restrict the investigation to copper and brass in Connecticut, on the grounds that it might give away what he had in mind.

He said he had the power to, and probably would, call for witnesses and records from outside the state.

"Fishing" Probe—A spot check of top men in the industry indicates no one knows what to expect. Some call the probe a "fishing expedition." A few say it will run out with no action resulting.

Well-informed sources say the Justice Dept. is most likely aiming in one or two directions: Price fixing, and/or the relationship of captive mills to their copper company owners.

Most industry leaders refuse to take seriously any attempts by Justice to prove price fixing. They claim competition from imports has kept the industry off balance for the last few years. Prices, they say, have been moving down rather than up.

Identical Bids—Those who do think this may be the aim of the government probe point to the four identical bids received recently by the Tennessee Valley Authority from major U. S. mills.

The actual bids are a little too complicated to take apart quickly. But, as an example, Anaconda American Brass Co., Chase Copper & Brass Co., Phelps Dodge Copper Products, Inc., and Bridgeport Brass Co. all bid 31.73¢ per lb for ⅞-in., 18 gage, admiralty brass condensor tube. The bids were all sealed.

Wolverine Tube Co. eventually won—for 26.26¢ per lb. Among those underbidding the four were Revere Copper and Brass Co., with 29.125¢ per lb, and two foreign sources—27.55¢ and 27.56¢ per lb.

Standard Item—A spokesman for one of the mills says this is a standard item. His company was merely bidding its list price—the price at which it would sell this item to anyone. He assumed the others were doing the same.

The four companies lost on their bids. But a Washington observer says the government is giving much closer attention to anything where collusion is remotely possible.

Smaller Mills—The other suggestion is that recent profit squeezes may have prompted some dissatisfaction among small independent mills over the relationship of captive mills to producer-owners.

Anaconda American is wholly owned by, and gets virtually all its copper from, Anaconda Co. Chase and Phelps Dodge Copper Products have almost the same relationships with Kennecott Copper Co. and Phelps Dodge Corp., respectively.

Controlled Supply—The gist of the complaint would be that independent mills' copper supply can be virtually controlled by companies whose subsidiaries they must compete against.

A check of small mills turned up none which would admit having complained to the Justice Dept. This has been the situation for years. And there hasn't been any muttering among the small mills.

Tin Prices for the Week

March 14—104.125; March 15—104.125; March 16—103.75; March 17, 103.875; March 20—104.25.*

* Estimate.

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum Ingot	26.00	24.70	12/17/59
Copper (E)	29.00	30.00	1/16/61
Copper (CS)	29.00	30.00	1/11/61
Copper (L)	29.00	30.00	1/16/61
Lead, St. L.	10.80	11.80	12/13/60
Lead, N. Y.	11.00	12.00	12/13/60
Magnesium Ingot	36.00	34.50	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	150-160	162-182	8/1/59
Zinc, E. St. L.	11.50	12.50	1/12/61
Zinc, N. Y.	12.00	13.00	1/12/61

ALUMINUM: 99% Ingot. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. Other primary prices, pg. 123.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.030-.038	.048-.061	.077-.096	.136-.250
1100, 3003	48.4	47.4	46.4	45.4
5052	55.8	53.0	50.8	49.2
6061-0	53.0	50.3	48.4	47.0

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
1-17	45.3-46.8	54.0-61.8
18-32	45.8-47.5	58.6-81.5
33-38	49.5-52.2	85.1-96.6
39-44	59.8-63.6	102.0-124.0

Screw Machine Stock—2011-T-3

Size"	7/32-5/16	11/32-23/32	3/4-1 1/16	1 3/32-1 1/2
Price	60.0	59.2	57.7	55.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.506	$2.013	$2.515	$3.017

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93.3	96.9	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.13	.....	51.36	55.32
Brass, Yellow	48.10	48.39	48.04	52.26
Brass, Low	50.65	50.94	50.59	54.71
Brass, Red	51.54	51.83	51.48	55.60
Brass, Naval	52.86	59.17	46.67	57.02
Muntz Metal	50.94	.....	46.25	.....
Comm. Bz.	52.98	53.27	52.92	56.79
Mang. Bz.	56.80	.....	50.20	.....
Phos. Bz. 5%	74.59	74.34	75.09	76.52

Free Cutting Brass Rod 33.71

TITANIUM

(Base Prices f.o.b. mill)

Sheet and strip, commercially pure, $6.75-$13.00; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$9.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.55-$6.05; alloy, $6.55-$9.00; bar, HR or forged, commercially pure, $4.00-$4.50; alloy, $4.00-$6.25; billets, HR, commercially pure, $3.20-$3.70; alloy, $3.20-$4.75.

PRIMARY METAL

(Cents per lb otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollars per lb contained Be $65.00
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $70.00
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.50
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic base.... $ 1.31
Cobalt, 97-99% (per lb) ... $1.50 to $ 1.57
Germanium, per gm, f.o.b. Miami, Okla., refined ..... $29.95 to $36.95
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9% dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz..... $75 to $85
Lithium, 98% ..... $9.00 to $12.00
Magnesium sticks, 10,000 lb..... 57.00
Mercury, dollars per 76-lb flask f.o.b. New York ..... $206 to $208
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $24 to $26
Platinum, dollars per troy oz... $82 to $85
Rhodium ..... $137 to $140
Silver ingots (¢ per troy oz.) 91.375
Thorium, per kg $43.00
Vanadium ..... $ 3.65
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot
No. 115 ..... 28.25
No. 120 ..... 27.50
No. 123 ..... 26.75
80-10-10 ingot
No. 305 ..... 32.75
No. 315 ..... 30.50
88-10-2 ingot
No. 210 ..... 40.50
No. 215 ..... 37.25
No. 245 ..... 32.50
Yellow ingot
No. 405 ..... 24.25
Manganese bronze
No. 421 ..... 28.00

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.25-24.50
0.60 copper max. 24.00-24.25
Piston alloys (No. 132 type).. 26.00-27.00
No. 12 alum. (No. 2 grade)... 22.75-23.25
108 alloy 23.25-23.75
195 alloy 25.75-26.75
13 alloy (0.60 copper max.)... 24.00-24.25
AXS-679 (1 pct zinc) 23.00-24.00

(Effective Mar. 20, 1961)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 23.75-24.75
Grade 2—92-95% 22.50-23.50
Grade 3—90-92% 21.50-22.50
Grade 4—85-90% 21.00-22.00

SCRAP METAL

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	25	24¼
Yellow brass	19¼	17⅝
Red brass	22¼	21½
Comm. bronze	23	22¼
Mang. bronze	18⅛	17⅝
Free cutting rod ends.	18⅝	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 25½
No. 2 copper wire 23½
Light copper 21¼
*Refining brass 22
Copper bearing material 21
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No 1 copper wire 25½
No. 2 copper wire 23½
Light copper 21¼
No. 1 composition 21½
No. 1 comp. turnings 21
Hvy yellow brass solids 16
Brass pipe 14½
Radiators 17

Aluminum

Mixed old cast. ..... 12½—13
Mixed new clips ..... 14½—15
Mixed turnings, dry ..... 13½—14

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 22¼—22¾
No. 2 copper wire ..... 20¼—20¾
Light copper ..... 18¼—18¾
Auto radiators (unsweated).. 13¾—14
No. 1 composition ..... 17½—18¼
No. 1 composition turnings... 16½—17
Cocks and faucets ..... 13½—14
Clean heavy yellow brass .... 11 —11½
Brass pipe ..... 14 —14½
New soft brass clippings .... 14 —14½
No. 1 brass rod turnings .... 14 —14½

Aluminum

Alum. pistons and struts .... 6½— 7
Aluminum crankcase ..... 8½— 9
1100 (Ss) aluminum clippings 11½—12
Old sheet and utensils ..... 8½— 9
Borings and turnings ..... 4½— 5
Industrial castings ..... 9 — 9½
2020 (24s) clippings ..... 10 —10½

Zinc

New zinc clippings ..... 5½— 5¾
Old zinc ..... 2¾— 3
Zinc routings ..... 1¾— 2
Old die cast scrap ..... 1 — 1¼

Nickel and Monel

Pure nickel clippings 52-54
Clean nickel turnings 40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 23-23.50
Clean Monel turnings 16.50-17
Old sheet Monel 22-23
Nickel silver clippings, mixed. 18
Nickel silver turnings, mixed. 15

Lead

Soft scrap lead ..... 7 — 7½
Battery plates (dry) ..... 3 — 3¼
Batteries, acid free ..... 2 — 2¼

Miscellaneous

Block tin ..... 75 —77
No. 1 pewter ..... 57 —58
Auto babbitt ..... 43 —44
Mixed common babbitt ..... 9½—10
Solder joints ..... 13½—14
Small foundry type ..... 8½— 9
Monotype ..... 8¾— 9¼
Lino. and stereotype ..... 8 — 8¼
Electrotype ..... 7½— 7¾
Hand picked type shells ..... 5¼— 5⅝
Lino. and stereo. dross ..... 1¾— 2¼
Electro dross ..... 2 — 2½

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES, STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3,*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				15.90 *T8*
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*	8.10 *P2*	5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3, T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8* 7.525* *M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	15.60 *N7*
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1, P11, B9*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3, Y1*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Struthers, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*		5.50 *Y1*			5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, N. Castle, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3, B4, M10* 7.525 *E3*			8.40 *S9*	15.55 *S9* 15.60 *N7*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W5*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*	$140.00 *B2*		6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, City, Ala. Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

* Electro-galvanized-plus galvanizing extras.

(Effective Mar. 20, 1961)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Thin *0.25* lb. coating in coils
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price 0.75 lb. 0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		Prices are for 50 lb. base box; for 45 lb. deduct 15¢; for 55 lb. add 15¢; for 60 lb. add 30¢.
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*				$9.10 *U1*	$6.25 *U1*
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*	6.775 *B3*		7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	$6.25 *B3*
	Worcester, Mass.									6.70 *A5*			
MIDDLE WEST	Alton, Ill.									6.60 *L1*	Holloware Enameling 29 ga.—*7.85 U1* at Gary; Pittsburgh; *J3* at Aliquippa; *W5* at Yorkville; *Y1* at Indiana Harbor; *W5* at Wheeling; *7.95 G2* at Granite City.		
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A9*	6.275 *A9*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1, Y1*	$6.25 *U1, I3*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*								$9.20 *G2*	
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1*†† *R3*	7.525 *R3, S1*	9.275 *R3*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.40 *U1, J3*	$9.10 *U1, J3*	$6.25 *U1*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	$6.40 *W5*** $6.25 *W3*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*		6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.40 *T2*	$9.10 *T2*	$6.25 *T2*
	Houston, Texas									6.65 *S2*			

* Electrogalvanized sheets. ** For 55 lb.; for 60 lb. add 15¢.

†† 7.425 at Sharon; Niles is 7.225.

(Effective Mar. 20, 1961)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *P2*	6.375*P2*	7.50 *P2*	7.95 *P2*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Steelton, Pa.		5.675 *B3*									
	Fairless, Pa.	5.825 *U1*	5.825 *U1*									
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7,A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3, T5*	9.025 *R3,R2, T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875*L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Plymouth, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8B5H2* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5,P8, H2* 9.225 *B5,P3*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*				7.925 *N4*	5.30 *N4*			7.625 *N4*	8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Youngstown, Steubenville, O.	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1,W5, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.675 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, B5*	9.00 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				9.05 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*		7.825 *B2*		9.05 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.25 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas, Sand Springs, Okla.	5.925 *S2*	5.675 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Mar. 20, 1961) * Special Quality.

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	73.00
Birmingham *R3*	62.00	62.50*	66.50	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	71.50†
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Lyles, Tenn. *T3*	.....	.....	.....	.....	73.00
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	.....	66.50	67.00	67.50	.....
Rockwood *T3*	62.00	62.50	66.50	67.00	73.00
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	71.00†
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos. Add 50¢ per gross ton for truck loading charge.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1, I4*, Toledo, *I4*, $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $89.00; (15.51-16.00), $92.00. Add 75¢ per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 13 pct; 13 to 13.5 pct; 13.5 to 14 pct, add $1. Add $1.00 for each 0.50 pct manganese over 1.00 pct.

† Intermediate low phos.

FASTENERS

(Base discounts, f.o.b. mill, based on latest list prices)

Hex Screws and All Bolts Including Hex & Hex, Square Machine, Carriage, Lag, Plow, Step, and Elevator

(Discount for 1 container) — *Pct*

Plain finish—packaged and bulk	46
Hot galvanized and zinc plated—packaged	39.25
Hot galvanized and zinc plated—bulk	46

Nuts: Hexagon and Square, Hex, Heavy Hex, Thick Hex & Square

(Discount for 1 container) — *Pct*

Plain finish—packaged and bulk	46
Hot galvanized and zinc plated—packaged	39.25
Hot galvanized and zinc plated—bulk	46

Hexagon Head Cap Screws—UNC or UNF Thread—Bright & High Carbon

(Discount for 1 container)

Plain finish—packaged and bulk	46
Hot galvanized and zinc plated—packaged	39.25
Hot galvanized and zinc plated—bulk	46

(On all the above categories add 25 pct for less than container quantities. Minimum plating charge—$10.00 per item. Price on application assembled to bolts.)

Machine Screws and Stove Bolts

(Packages—plain finish)

	Discount Screws	Bolts
Full Cartons	46	46

Machine Screws—bulk

¼ in. diam or smaller	25,000 pcs	50
5/16, ⅜ & ½ in. diam	15,000 pcs	50

Machine Screw and Stove Bolt Nuts

(Packages—plain finish)

	Discount Hex	Square
Full Cartons	46	57
Bulk		
¼ in. diam or smaller	25,000 pcs	
5/16 or ⅜ in. diam	56	60
	15,000 pcs	
	56	60

Rivets

	Base per 100 *lb*
½ in. diam and larger	$12.85
	Pct Off List
7/16 in. and smaller	15

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1960 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

(Effective Mar. 20, 1961)

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	25.00	28.25	26.00	29.50-32.75	32.00	29.50-34.50	47.50	38.00	46.50	—	19.25-21.50	—	19.75-21.75
Billets, forging	—	37.75	38.75	39.50	42.50	39.50	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	46.75	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	52.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	40.50	68.50	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	52.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	44.25	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7,* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1,* (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8* (down to and including ¼").

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa., *C2.*

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3****	173	190	...	...	190	9.00	9.675
Atlanta *A8***	173	191	...	212	197	9.00	9.75
Bartonville *K2***	175	193	183	214	199	9.10	9.85
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4*	173	191	177	212	197	9.00	9.75
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Chicago *W7*	173	.....	.....	.....	.....	9.00	9.55†
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	193	...	214	199	9.10	9.85
Donora Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	177	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	177	...	156	9.00	9.675
Joliet Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9**	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	.....	.....	213	9.95	10.50
Rankin Pa. *A5*	173	187	.....	.....	193	9.00	9.55
So. Chicago *R3*	173	187	.....	.....	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50
Sparrows Pt. *B3***	175	.....	...	215	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 13-13.5¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brooke Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
B9 Barry Universal Corp., Detroit, Mich.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit
H2 Hercules Drawn Steel Corp., Toledo, O.

I2 Ingersoll Steel Div., New Castle, Ind.
I3 Inland Steel Co., Chicago, Ill.
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Lackede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
M10 Mill Strip Products Co., of Pa., New Castle, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Div., Bliss & Laughlin, Inc., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.
S14 Screw and Bolt Corp. of America, Pittsburgh, Pa.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

STEEL SERVICE CENTER PRICES

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		9.37	10.61	11.83	10.85	9.73	9.94	9.53	13.24	.....	.....	.....	.....
Baltimore	$.10	7.87	9.71	10.16	10.28	8.44	9.13	8.65	11.80	17.48	16.48	21.58	20.83
Birmingham		8.46	10.20	10.69	9.45	8.41	8.47	8.26	13.14	16.76	16.76	.....	.....
Boston	.10	9.84	10.68	11.87	12.26	9.72	10.26	9.87	13.45	17.79	16.69	23.89	21.04
Buffalo	.15	8.70	9.45	11.40	11.15	8.80	9.30	8.90	11.60	17.45	16.45	21.55	20.80
Chicago**	.15	9.37	10.35	10.85	11.54	9.21	9.72	9.37	10.80	17.10	16.10	21.20	20.45
Cincinnati**	.15	9.53	10.41	10.90	11.86	9.59	10.29	9.48	11.68	17.42	16.42	21.52	20.77
Cleveland**	.15	9.37[1]	10.81	11.07	11.66	9.45	10.11	9.69	11.40	17.21	16.21	21.31	20.56
Denver		11.55	12.53	13.03	13.72	11.39	11.90	11.55	12.98	.....	.....	.....	20.84
Detroit**	.15	9.63	10.61	11.20	11.91	9.58	10.29	9.68	11.16	17.38	16.38	21.48	20.73
Houston**		10.17	10.98	11.35[3]	11.73	9.41	9.81	9.58	13.10	17.50	16.55	21.55	20.85
Kansas City	.15	10.53	11.37	10.95	12.70	10.39	10.91	10.55	11.72	17.17	15.87	21.87	21.12
Los Angeles		10.35[1]	11.20	12.20	12.40	10.30	10.45	10.25	14.20	18.30	17.35	22.90	22.20
Memphis	.15	9.13	10.50	.....	10.79	8.81	9.16	8.97	12.89	.....	.....	.....	.....
Milwaukee**	.15	9.51	10.49	10.99	11.68	9.35	9.94	9.51	11.04	17.24	16.24	21.24	20.49
New York	.10	9.77	10.23	11.45	11.56	9.61	10.30	9.84	13.35	17.50	16.50	21.60	20.85
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia	.10	9.90	10.10	10.99	11.35	9.70	9.95	9.75	12.05	17.48	16.48	21.58	20.83
Pittsburgh**	.15	9.37	10.81	11.83	11.64	9.21	9.72	9.37	11.40	17.10	16.10	21.20	20.45
Portland		9.45	11.30	12.35	11.45	9.60	10.05	9.45	16.65	18.60	17.80	22.70	22.20
San Francisco	.10	10.27	11.79[2]	11.50	11.88	10.48	10.50	10.17	15.20	18.30	17.35	22.90	22.20
Seattle		11.35	12.45	13.40	12.80	10.95	11.50	10.80	16.20	18.60	17.80	22.70	22.15
Spokane	.15	11.35	12.45	13.40	12.80	10.95	11.50	10.80	16.35	17.75	17.95	21.58	22.30
St. Louis**	.15	9.57	10.75	11.23	11.74	9.43	9.95	9.59	11.43	17.48	16.48	21.58	20.83
St. Paul	.15	9.72	10.39	11.54	11.89	9.56	10.07	9.72	11.64	.....	16.69	.....	21.04

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **These cities are on order quantity pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—¾" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—¾-2 15/16; Cold-finished bar—C 1018—1" rounds; Alloy bar—hot-rolled 4615—1⅝" to 2⅞"; cold drawn—15/16" to 2⅞" round; Hot-rolled 4140—⅝" to 2⅞" round, cold drawn—15/16" to 2⅞" round.

†† 13c zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter. [3] 10 ga. x 48 — 120.

(Effective Mar. 20, 1961)

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $290 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.50¢ per lb.

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.6
Chicago	140.0
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

COKE

Furnace, beehive (f.o.b.)	Net-Ton
Connellsville, Pa.	$14.75 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Chattanooga, Tenn.	30.80
Ironton, O., f.o.b.	30.50
Detroit, f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearny, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	32.00
Erie, Pa., f.o.b.	32.00
St. Paul, f.o.b.	31.25
St Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

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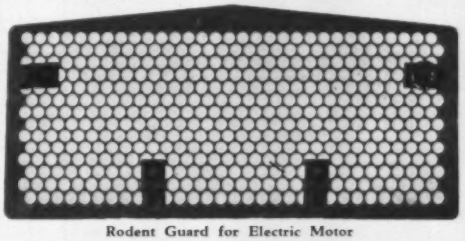

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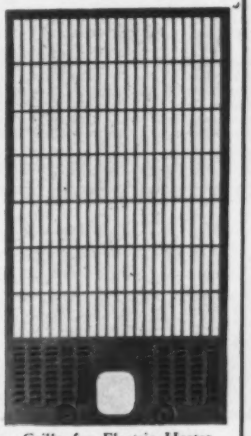

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Manufacturers of DIAMOND Perforated Metal Panels for Modern Acoustical Ceilings.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *S14*	.....	.....	.....	.....	.....	15.35
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Anderson, Ind. *G4*	9.10	.....	.....	.....	.....
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	15.60	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7, a*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Castle, Pa. *M10, a*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper

- Rolled elliptical, 18 in. or longer, 5000 lb lots 42.50
- Electrodeposited, 5000 lb lots ... 35.50
- OFHC anodes ..... 40.50 to 43.50 (depending on shape)

Brass, 80-20, ball anodes, 2000 lb or more 50.50

Zinc, ball anodes, 2000 lb lots ..... 18.75 (for elliptical add 1¢ per lb)

Nickel, 99 pct plus, rolled carbon, 5000 lb ..... 1.0225 (Rolled depolarized add 3¢ per lb)

Cadmium, 5000 lb 1.50

Tin, ball anodes $1.05 per lb (approx.).

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum, N. Y.. 65.90

Copper sulphate, 25.2 Cu min, 6000 lbs per cwt, Detroit 17.45

Nickel sulfate, 5000 lbs 29.00

Nickel chloride, freight allowed, 100 lb 45.00

Sodium cyanide, domestic, f.o.b. Chicago, 200 lb drums 24.00

Zinc cyanide, 100 lb, N. Y. 60.75

Potassium cyanide, 100 lb drum N. Y. 45.50

Chromic acid, flake type, 10,000 lb or more, N. Y. 30.44

METAL POWDERS

(Cents per lb, f.o.b. shipping point for ton lots or over, except as noted)

Iron Powders

- Molding grade, domestic and foreign, 98 pct Fe, 100 mesh bags, freight allowed east of Miss. R. 11.50
- Electrolytic Iron, melting stock, 99.87 pct Fe, truckload lots 25.75
- Carbonyl Iron (200 lb lots) 88.00
- Welding Grades 8.10
- Cutting and Scarfing Grades 9.85
- Hydrogen reduced, domestic 11.25

Copper Powders

Molding Grades

- Electrolytic, domestic, f.o.b. shipping point. 15.00†
- Atomized ..... 42.3 to 60.3
- Reduced ..... 15.00†
- Chemically Precipitated 43.5

Brass, 5000-lb lots ..... 32.3 to 48.9

Bronze, 5000-lb lots ..... 50.3 to 54.2

Chromium, electrolytic 5.00

Lead ..... 7.50†

Manganese, electrolytic ... $1.00

Molybdenum ..... $3.60 to $4.35

Nickel $1.15

Carbonyl Nickel, 20,000 lb lots $1.01

Nickel-Silver, 5000 lb lots.. 57.9 to 65.9

Silicon 70.00

Solder ..... 7.00†

Stainless Steel, 316 ..... $1.07

Stainless steel 304 ..... 89.00

Tin ..... 14.00†

Titanium, 99.25 + pct, per lb, f.o.b. $11.25

Tungsten, carbide grades... $3.25

Zinc ..... 19.5 to 32.7

† Plus cost of metal.

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*) Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, P2, A3, J2*) 10 pct	15 pct	20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, $43.00; 1 side, $36.10.

(Effective Mar. 20, 1961)

REFRACTORIES

Fire Clay Brick

Carloads per 1000

- Super duty, Mo., Pa., Md., Ky.... $185.00
- High duty (except Salina, Pa., add $5.00) 140.00
- Medium duty 125.00
- Low duty (except Salina, Pa., add $2.00) 103.00
- Ground fire clay, net ton, bulk... 22.50

Silica Brick

- Mt. Union, Pa., Ensley, Ala. $158.00
- Childs, Hays 163.00
- Chicago District 168.00
- Western Utah 183.00
- California 185.00
- Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O. 163.00-168.00
- Silica cement, net ton, bulk, Chicago 26.75
- Silica cement, net ton, bulk, Ensley, Ala. 27.75
- Silica cement, net ton, bulk, Mt. Union, Pa. 25.75
- Silica cement, net ton, bulk, Utah and Calif. 39.00

Chrome Brick

- Standard chemically bonded, Baltimore, Md. $620.00
- Gary, Ind. 658.50
- Standard, Pascagoula, Miss. 647.50
- Standard chemically bonded, Curtiner, Calif. 119.00
- Burned, Baltimore 585.00

Magnesite Brick

- Standard, Baltimore $715.00
- Chemically bonded, Baltimore 655.00
- Chemically bonded, Pascagoula, Miss. 682.50

Grain Magnesite

St. ⅜ to ½-in. grains *Per net ton*

- Domestic, f.o.b. Baltimore in bulk. $73.00
- Domestic, f.o.b., Pascagoula, Miss... 80.00
- Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk 46.00
- in sacks 52.00-54.00

Dead Burned Dolomite

F.o.b. bulk, producing points in:

- Pa., W. Va., Ohio $16.75
- Missouri Valley 15.60
- Midwest 17.00

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

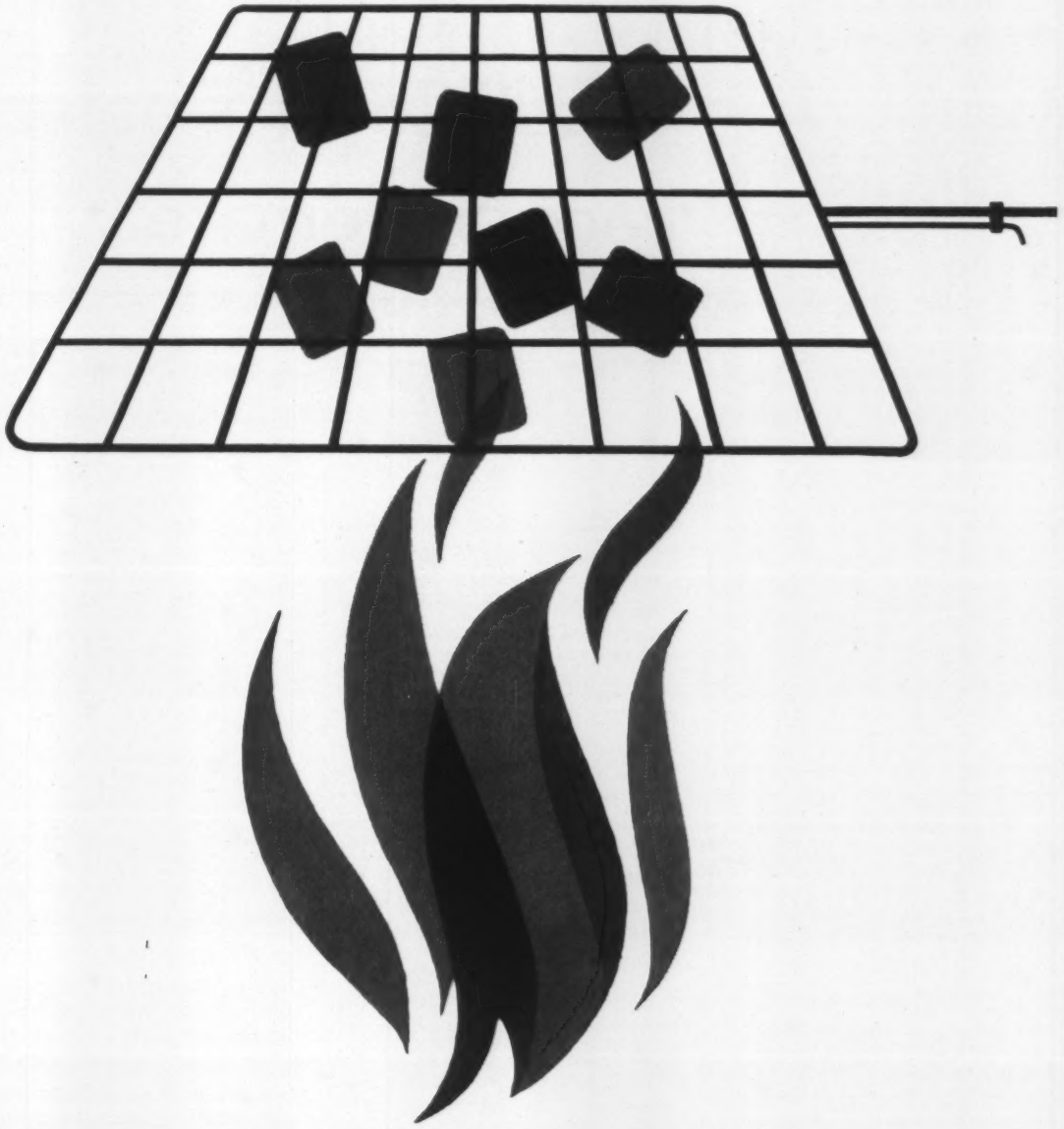
GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100, 110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	C.D.	Elec. Weld H.R.
Babcock & Wilcox..	2	13	40.28	47.21	35.74
Jones & Laughlin *	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
National Tube.....	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
Pittsburgh Steel...	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

* Electricweld only.



toasted nickel briquettes for low H_2 diet

Sherritt's recipe for making low-hydrogen nickel is as effective as it is simple: take pure nickel powder, press into uniform briquettes, and heat for a quarter of an hour at 1650°F. The result: pure nickel in its handiest form, with scarcely a trace of hydrogen. High-purity Sherritt nickel is also available in three standard grades of powder, special grades, and coated powders.

FOOTE MINERAL COMPANY *is the exclusive sales agent for Sherritt nickel and cobalt in the United States and Canada. For complete illustrated brochure with prices and delivery information, contact the Foote Mineral Company, 4385 Eighteen West Chelten Building, Philadelphia 44, Pa.*

SHERRITT GORDON MINES LIMITED

GUARANTEED—RE-NU-BILT

Electric Power Equipment — A. C. Motors

3 phase—60 cycle

SYNCHRONOUS

Qu.	H.P.	Make	Type	Volts	Speed
1	6000	G.E.	ATI. 8P.F.	2200/6600	600
1	3500	G.E.	TS 1.0P.F.	4600/2300/4000	360
2	1750	G.E.	ATI	2300	3600
2	500	G.E.	TS 7569	2200	1200
1	400	G.E.	TS 7565	2200	1200
1	325	G.E.	ATI 1.0P.F.	440	1800
2	300	ElMach.	BRKT	2200	1200

SLIP RING

1	1750	G.E.	M-579S	4800	1800
1	800	Whse.	CW	500	1776
1	800	G.E.	MT-428	2300	450
1	600	Whse.	CW 4-32-D-15	440	1778
1	550	Whse.	CW	440	252
1	500	Whse.	CW	550	350
1	300	A.C.	ANY	440/2300	720
1	300	G.E.	MTP-581	2200	1800
1	250	G.E.	IM-16	220/440	875
1	250	Cr.Wh.	Size 29Q	2300	350
1	250	G.E.	MT-424Y	4000	257
1	200	G.E.	IE-13B	220	1890
2	200	Whse.	CW-890	2300	1775
1	200	G.E.	IM	2200	580
1	200	G.E.	IM	440	435
1	125	G.E.	MT-557	220/440	1200
1	125	A.C.	ARY	440	870
3	100	A.C.		440	695
1	100	G.E.	M-6335Z	220/440	580
1	100	Whse.	CW-754C	220/440	900

SQUIRREL CAGE

3	1500	G.E.	K	2200	3580
1	500	G.E.	FT-559AY	2200	3600
1	500	Whse.	CS-1115	2300	863/445
2	500	Whse.	CSP-583H	440	3600
4	500	A.C.	ARW	2300	3600
4	500	Whse.	CS-1216	2200	500
2	450	Ell.	F-3910	2200	1200
1	400	Whse.	CS-7151-610H	6600/4000	3565
1	300	Cont.	NL-686S	440	1780
1	300	G.E.	KT-559A	2200	1775
1	300	Whse.	CS-1002	2300	580
1	250	Whse.	CS-875S	2200	1775
2	200	Whse.	CS-855S	220/440	1750

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NILES GANTRY PLANER

New 1941 *Used 3 years*

22' x 70' planing area
2 rail heads
1 cross planing head
Speeds 15 to 90 FPM Double-cut
150 HP main drive
Serial No. 21728

1/10 of original cost

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Used and Reconditioned

RAILWAY CARS and REPAIR PARTS

AIR DUMP CARS—Drop-Door Type
5, 30-Cu. Yd.—All-Steel

3 — FLAT CARS

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OPEN TOP—Also COVERED

DIESEL-ELECTRIC LOCOMOTIVES
25-Ton to 120-Ton Std. Ga.

1—100-TON WHITING DROP PIT TABLE

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51-B E. 42nd St. New York 17, N. Y. Ph. YUkon 6-4766

West Coast Dealers Face Stalemate

Used machinery dealers along the West Coast say customers are holding off until the year's economic pattern is set.

Most dealers say prices are low and inquiries are plentiful.

■ It's a "wait and see" period for used machinery dealers on the West Coast. Customers are waiting for the expected defense-industry push; an increase in construction and building starts.

Northern and southern California are the major Farwest markets. Dealers there report it takes hard selling to turn inquiries into orders. Their customers have slim backlogs and are reluctant to lay out money for equipment.

But when general business gets better, dealers will be ready. Showrooms and warehouses are crammed.

Bargain Time—Prices right now are low; buyer interest is high. Los Angeles and San Francisco dealers say more people are looking. Good barometer: Used machinery advertising is pulling a higher-than-average response.

One dealer says good lathes, with 9, 10, or 11-in. wing and short bed are "hot items." Milling machines will move too, at the right size and right price. Surface grinders and sheet metal machinery, like shears and brakes, meet with fair demand.

Another dealer, who says business is improved, still complains "things are quite spotty. You get a few good days, and then a few bad ones. There just doesn't seem to be any predictable trend."

He says the price situation has firmed. But "war tools," dating back to the early 1940's, take a beating.

Eastern Buying — One West Coast dealer is buying in the east on hard-to-get specialized equipment. But he complains that when freight and other expenses are added, the price is too high.

This dealer says he's watching auctions closely, but good buys are scarce.

His outlook: Business will rock along close to present levels for at least another few months. Beyond that, things are too uncertain to predict. He hopes that by midyear some of the machinery buyers now stalled will move.

The picture is the same in Seattle and the Pacific Northwest: Wait and see. But there's not as much optimism as in the California markets.

Recession Pinch — Washington's major manufacturing company, Boeing Airplane Co., keeps moving ahead at a fast clip. However, other metalworking companies have felt the pinch of the current recession.

"I'm quitting! Give my love to the three men who replace me."

IMMEDIATELY AVAILABLE

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3 LEE WILSON RECTANGULAR BELL-TYPE ANNEALING FURNACES

atmosphere-controlled with 9 bases, are available. Each is approximately 7' x 7' x 14' Excellent when used for manufacture of steel coils, they have a capacity of 150 tons per charge. These top-grade furnaces are still set up in the plant. Tremendous values specially priced for prompt sale.

NATIONAL MACHINERY EXCHANGE

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COAL CAR THAWING UNIT

Complete 5-Car Capacity LP Gas Fired Unit

Consisting of

38—Under Car Heaters
4—1000 Gal. Surface Type LP Tanks
Structural Steel Framed Thawing Shed
Accessory Equipment

For Further Information Write:

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c/o The IRON AGE, Chestnut at 56th, Phila. 39

FOR SALE OR RENT

1500 HP Alco Diesel Electric Switcher Locomotives. New 1949. Excellent Condition. 7 Available.
44 Ton Gen. Elec. Diesel Elec. Loco. Cummins 190 HP Engine. 4 Traction Motors. Rebuilt.
25 Ton Gen. Elec. Diesel Elec. Loco. New 1942. Cummins Engine.
40 Ton Ind. Brownhoist Diesel Loco. Crane. New 1946. Caterpillar Eng.
25 Ton Ind. Brownhoist #5 Diesel Loco. Crane. New 1941. Cat. Eng. Recond.
60 Ton Link-Belt K-595 Lifting Crane. 120' Boom. Cat D-17000 Diesel.

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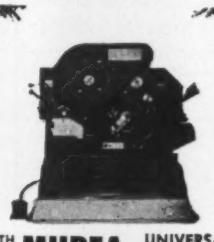
HIGHER CAPACITY MODERN DESIGN LOWER PRICE



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CARS

130 Cu. Ft. Larry Scale Std. Ga. 230V DC (2)
800 Cu. Ft. Larry 14'8" Ga. 230V DC (2)
65 Ton Hot Metal Std. Ga. w/65 Ton Ladles (4)
50 Ton Slag Std. Ga. w/300 Cu. Ft. Ladles (2)
50 Ton Slag Std. Ga. w/260 Cu. Ft. Ladles (2)
50 Ton Transfer Std. Ga. 230V DC
10 Ton Quenching Std. Ga. 41'6" Wheelbase
4 Ton Cable 20½" Ga. Steel Lined (100)

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32000/45000 CFM 16/26 PSI Discharge Driven by 2430/5000 HP Cond. Turbine 200PSI 3450/4300RPM

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110 Ton Cleveland Ladle 48'5" Span 4 Motor Cab Op.
20 Ton Shaw 41'7" Span 3 Motor Cab Op.
10 Ton Shaw 52' Span 3 Motor Cab Operated
10 Ton Bedford ¾ Yd. Bucket 61' Span 4 Motor 5 Ton Auxiliary Cab Operated
5 Ton Wright 27' Span Floor Operated
5 Ton Wright 36' Span Floor Operated

ELECTRIC BRIDGE 230V DC

230'3½" Span plus 80' Cantilever 6 Ton Bucket Single Trolley 246'3½" Travel Motor Driven Legs on Rails. Supported on (4) 2 Wheel Trucks

TRANSFORMERS—GENERATORS

2000 KVA Westinghouse 13800—2400 1/60 (4)
500 KVA Westinghouse 2200—480 1/60 (3)
200 KVA Westinghouse 2300—460 1/60 (3)
15 KVA Westinghouse 480—120/240 1/60 (6)
750 KW G.E. 3/60/2200/900RPM M.G. SET 250V DC (2)
1250 KVA GE 3/60/2300/3600RPM TURBO SET Cond. 200PSI

2500 TON/DAY 108 COKE OVENS 2 BATTERIES NEW 1950

COAL HANDLING

Bradford Breakers 12'x19'8" 300 TPH 100 HP AC(2)
Penna Hammermill SX13 150 TPH 400 HP AC (3)
Koppers 2 Roll Adjust. Crusher 36"x42" 40 HP AC
Unloading Towers Steam Driven w/2 Ton Bucket (7)
Koppers Dbl Paddle Mixer 49 Paddles 22" Dia (2)
Trimmer Conveyor 30"x13'3" c/c Cleated 230 V DC
Portable Conveyor 36" long 10 HP 3/60/220-440
Portable Conveyor 25' long 7½ HP 3/60/440

SCALES—Printomatic

50 Ton TRUCK Fairbanks 60' Platform
30 Ton TRUCK Fairbanks 40' Platform (2)
100 Ton LARRY CAR Fairbanks 14'8" c/c Rail

PIG CASTING MACHINE 2 Strand

140' C C 450 Molds per Strand Complete with (2) Gear Reducers 380:1 and (2) 15/20 HP 600/1200 RPM 230V DC Motors

OTHER ITEMS

CAR HAULS Drum Type 20"x18" 25 HP 230V DC
QUENCHING LOCOMOTIVE GE Class LS-2E-20FS Std. Ga. 8' Wheelbase 230V DC
SKIP HOIST Lidgerwood 178' @ 225RPM 230V DC Maximum Load 15 Ton (3) 140 Cu. Ft. Cars
TRAVELLING BRIDGE Steam Operated 230' Span Double Trolley 2 Buckets
TANKS Steel 10M to 1MM Gallon (50)
MOTORS—DC Type CO & MD Series & Compound Wound 230V. 1 to 200 HP (100)
MOTORS—AC 3/60/440V. Squirrel Cage & Slip Ring 1 to 100 HP (100)

(2) PUSHER MACHINES

Combination Pusher, Leveller, & Door Machine 28'6" C/C of Rail. 15'3" Wheelbase 230V DC

Representative on Premises—Dunkirk 9-3380

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34—COLD ROLLING MILLS

1—8" x 4" Standard w. Collers 25 HP DC Motor
15—8" x 6" Standard w. Collers 25 HP DC Motor
14—8" x 8" Waterbury-Farrel—25 HP DC Motor
2—8" x 8" Waterbury-Farrel (roll. brg.) 25 HP Motor
2—10" x 10" Blake & Johnson 40/65 HP DC Motor

All Mills with variable speed drives & Collers, Edge Rollers, etc.

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COMPRESSORS

No better values at any price

100 CFM	150 psi	6 x 7 Ing.	
138 CFM	100 psi	7 x 7 Ing.—CPT—Worth.	
142 CFM	125 psi	Ingersoll Rand Type 40-Jaeger.	
183 CFM	150 psi	7 x 7 Joy WG9.	
194 CFM	125 psi	7-7-6 x 5 Worth. M40.	
234 CFM	100 psi	9 x 9 Ing.—Worth Chic. Penn.	
290 CFM	75 psi	10 x 9 Ing. ES-1	
364 CFM	100 psi	10 x 9 Joy WG9.	
465 CFM	100 psi	12 x 11 IR—Worth—CP.	
502 CFM	125 psi	12 x 13 Ing. Rand. Worth.	
676 CFM	100 psi	15-9½ x 12 Ing. XRB.	
686 CFM	100 psi	14 x 13 IR.	
800 CFM	100 psi	14½-9 x 7 Ing. Rand. XLE 125 hp. Syn. 3-60-2300—8 PF.	
877 CFM	125 psi	17-10½ x 14—IR—XRB.	
1670 CFM	100 psi	C300-300H Fuller Rotary. 300 hp. West. Syn. 3-60-440. 80% PF.	
2520 CFM	125 psi	17-10¾ x 8 Clark CMA 4L 350 hp. Syn. 3-60-2300.	
2600 CFM	45 psi	20-20 x 14 Ing. Rand XRE 250 hp. Syn. 360-550—8 PF.	

Portable Gas-diesel 60"-800".

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1000 lb. Chambersburg J-2 Board Drop Hammer

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LUdlow 2-7121

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Purchasing Dept.

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WALLACK BROTHERS
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Bars—Billets—Sheet—Plate
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Purchasing Dept.

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BOX H-156
c/o The IRON AGE, Chestnut at 56th, Phila. 39

WELL ESTABLISHED STEEL & WIRE COMPANY looking for experienced salesman, covering Round and Flat High Carbon Products—Confidential.

BOX H-155
c/o The IRON AGE, Chestnut at 56th, Phila. 39

GENERAL SALES MANAGER
FOR LEADING EASTERN STEEL SERVICE CENTER

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(1) At least 3 years operating as sales manager, industrial metal products sales. Experience in alloy & stainless tubing preferable but not essential.

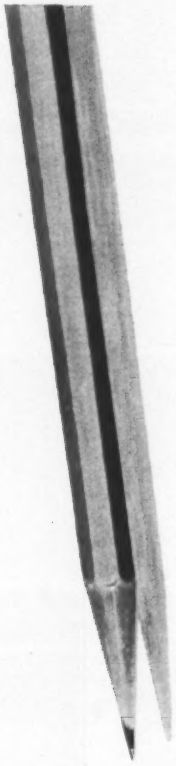
(2) Proven leadership in training & directing salesmen and representatives.

(3) Ability to plan, organize & obtain sales objectives.

BENEFITS:

- Salary $17,000 minimum starting
- Share company profits
- Car & expenses
- Complete company benefits

Reply giving full history to
BOX H-166, c/o The IRON AGE, Chestnut at 56th, Phila. 39



IN METALWORKING. DESIGN IS EVERYBODY'S JOB

Sure, design is a primary function of certain metalworking executives. But its actual importance extends completely across the executive ranks. Decisions on styling, materials, components, and processes frequently involve top company officials and sales managers as well as engineering and production executives.

The May 11 issue of The Iron Age will go a long way toward satisfying management's need to keep up-to-date on the latest and best design ideas from a metalworking point of view. There will be features aimed at the design interests of administrative, production, engineering, and purchasing personnel.

The IRON AGE

DESIGN SHOW ISSUE

ISSUE—MAY 11, 1961

CLOSING—APRIL 28, 1961

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IN THE VACUUM MELTING FIELD . . .

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CHUCKING MACHINES
Tool Rotating
GOSS & DE LEEUW MACHINE CO., KENSINGTON, CONN.

Ernst cuts steel costs to customers up to 10% with three new Wean Coil Processing Lines

Jim Moon, sales engineer of McKay Machine (above left), represents Wean Equipment Corporation in the Buffalo area. During a recent call on Ernst Iron Works, Division of Ernst Steel Corporation, Jim talked with Carl Grosse, Plant Superintendent, about the three Wean coil processing lines recently installed by this major metals warehousing firm.

According to Mr. Grosse, the Wean slitting, shearing and coil banding lines have reduced Ernst's handling, labor and scrap costs up to 10%. In addition to providing lower costs to Ernst's customers, this modern coil processing system helps this firm give fast service while easing inventory and supply problems through the purchase of standard size coils.

Equipped with modern, automatic controls, the Wean coil processing lines are operated by only four men and can handle 20,000 lb. coils, up to 54" wide and from .015" to .135" thick.

The McKay Machine Company, sales representatives for Wean Equipment Corporation to the metalworking and warehousing industries, will be able to assist you with complete engineering and technical information in planning your slitting and shearing requirements. Why not contact a McKay sales engineer to see how Wean coil processing equipment can help lower your costs.

THE McKAY MACHINE COMPANY REPRESENTS WEAN EQUIPMENT CORPORATION IN SALES TO THE METAL FABRICATING AND WAREHOUSING INDUSTRIES

McKAY McK MACHINE

THE McKAY MACHINE COMPANY
Youngstown 1, Ohio

WEAN

WEAN EQUIPMENT CORPORATION
Cleveland 17, Ohio

New Signode tool puts more power in packaging of tin plate sheets

A new Signode tool, the AMP, is helping to make the strapping of tin plate sheet packs faster, easier, and more economical than ever before in several large mills. In fact, there is a special high-tension model of the AMP for tinplate. Two of them are being used here.

The AMP takes strapping direct from the coil. Press a trigger and air power tensions the strap to any preset value up to 1600 lb. at normal 90 p.s.i. line pressure. Press another trigger and air power seals the strapping and severs it from the coil. That's it.

The AMP is one more cost saving, time saving weapon in the Signode line of equipment that includes hand and power strapping tools and semi-automatic or operatorless strapping machines for the least and the largest of strapping jobs. Write for more information about the-AMP or other equipment, or ask the Signode man near you.

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